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Insects

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SEPTEMBER 15, 1903.

INVERTEBRATA PACIFICA

Contributions from and through Department of Biology, Pomona College.

EDITED BY C. F. BAKER, CLAREMONT, CALIFORNIA.

HOMOPTERA

ON THE GNATHODUS SPECIES OF THE ABDOM- INALIS GROUP.

C. F. BAKER.

Gnathodus abdominalis is one of the commonest species of the group in the United States, being especially well distributed in the southern two-thirds of this area. It is the type form of a group of the old genus in which the head is as wide or wider than the pronotum, and the ocelli approach very closely to the eyes. These characters give it an aspect very different from that of the original type of *Gnathodus*.

I propose to here separate *abdominalis* as the type of a new genus—*Eugnathodus*. In western Nevada I found a new *Eugnathodus*, differing remarkably from *abdominalis* in that the vertex was considerably produced. In western Nicaragua I found the genus well represented, while extensive collecting failed to turn up a single true *Gnathodus*. The genitalia are very similar in all the species, in the female the hind margin of last ventral segment being simply truncate, so far as observed.

Genus *Eugnathodus*.

SYNOPSIS OF SPECIES.

- (a) Vertex strongly produced at middle; color pale olive, the head fuscous and the elytra whitish translucent; length 3 mm. Mountains bordering Lake Tahoe in Nevada. NEVADENSIS n. sp.



(aa) Vertex about as long or shorter at middle than at eyes.

(b) Propleura behind eye so narrow that hind margin almost touches eye; body small, short, and thick set; color opaque yellowish throughout; length 2.5 mm, Managua, Nicaragua.....*FLAVESCENS* n. sp.

(bb) Propleura behind eye broad, of the *abdominalis* type.

(c) Head and prothorax sordid whitish or yellowish, or if greenish then with dark dots; anterior margin of prothorax broadly evenly rounded.

(d) Head and pronotum usually more or less fuscous tinted, and with more or less distinct fuscous markings.

(e) Pronotum sordid greenish with numerous dark vermiculate dots; elytra whitish translucent, the tip including appendix and apical cells obliquely smoky; length 3 mm. Managua, Nicaragua.....*VERMICULATUS* n. sp.

(ee) Pronotum sordid whitish with more or less well defined longitudinal bands; elytra translucent whitish; head fulvous tinted with more or less distinct darker markings.

(f) Length 3-3.5 mm. United States to Nicaragua.....*ABDOMINALIS* Van D.

(ff) Length 4-4.25 mm. San Marcos, Nicaragua..*ABDOMINALIS*, var. *MAGNUS* n. var.

(dd) Head and pronotum sordid whitish or greenish and entirely without fuscous markings.

(c) Size very small; elytra nearly translucent; length 2.5 mm. Managua, Nicaragua.....*DELICATUS* n. sp.

(ee) Size medium, length 3.5 mm., head and pronotum yellowish white; elytra translucent milky white. Managua, Nicaragua.....*LACTEUS* n. sp.

(cc) Head and pronotum pale green, the former slightly pointed and decidedly tumid; elytra nearly decolored, all translucent and apparently minutely roughened except two inner apical cells which are clear. Length 2.75 mm. Champerico, Guatemala.....*TUMIDUS* n. sp.

A NEW GENUS OF THE TYPHLOCYBINI.

C. F. BAKER.

In Typhlocybrids with margined wings we find one genus with three apical cells, two with two apicals, and one with one. In those without a marginal vein we have had cases of three cells (*Eupteryx*) and of two cells (*Typhlocyba*) in the wing. To complete this parallel series now comes a little Typhlocybrid from Nicaragua, the smallest, slenderest species I have seen in the tribe or even in the family. This insect has the aspect of *Typhlocyba* and but a single apical cell in a wing without a margin. The elytron is altogether unique for it is angled at the apex, making the large stalked second apical cell diamond-shaped. I name the new genus *Typhlocybella*.

***Typhlocybella minima* n. sp.**

Length 2.25 mm. Color sordid white with fine olive markings. Face darker, with a transverse line above. An irregular line runs around apical and lateral margins of vertex within the border. The pronotum bears four more or less distinct longitudinal olive lines. Elytron transparent, the veins margined with smoky and the apical cells suffused with smoky. A golden cloud occurs near base of corium. Tergum and venter mostly black.

Collected at Managua, Nicaragua by the author.

THE GENUS ERYTHRIA IN AMERICA.

C. F. BAKER.

In Nicaragua I found a number of small, thick set, highly colored Typhlocybrids, which have the venation of *Dicraneura*, but differ widely from that genus in characteristic proportions of body. They are exactly congeneric with the European species of *Erythria*, and I shall describe them under that name, although none have yet been described from America. I called attention to the possible status of this genus in "Psyche" several years ago.

Erythria Donaldsoni n. sp.

Length 3 mm. Color sordid yellowish with fine olive lineations and mottlings. Front with interrupted brown arcs below, above with two olive loops extending over from vertex. Vertex with a median line and two twice looped lateral lines which connect with the median line on anterior margin. Anterior margin of pronotum yellowish with four dark dots, the remainder mottled olive. Scutellum yellowish with two dark median dots anteriorly and two faint longitudinal lines posteriorly. Elytron, except costal cell, nearly to cross nervures finely yellow mottled on an olive background. Two spots on claval margin distad of a ngle, and extreme apex of clavus white. Apical third of elytron fuliginous, the veins white. Small transparent spots in apical cells and larger ones in anteapical cells.

Collected at Managua, Nicaragua, by the author and named for Hon. Chester Donaldson, U. S. consul there, and a thorough American gentleman, keenly alive to the interests of fellow countrymen.

Erythria Guzmanii n. sp.

Length 2.75 mm. Sordid yellowish with lower part of face, venter, and tergum black. Front with interrupted brown arcs. Vertex with a brownish half loop on either side of front margin and a fainter transverse line posteriorly. Pronotum with a group of several brown dots on either side near front margin; most of disc olive and hind margin whitish. Elytra with veins whitish translucent, distally the veins are margined with fuliginous which color entirely fills the inner and outer apical cells. Two yellow areas in the clavus, one in the brachial cell, and two in the basal cell, are narrowly margined with smoky. About midway in the costal margin is a yellow elliptical ring, the breadth of which extends from costa across radial cell, and which is crossed lengthwise by a yellow line on the cubital nerve. At each end of this ring is an irregular blackish area.

Collected at San Marcos by the author. Named for Dr. Guzman, the Director of the Nicaraguan National Museum at Managua.

Erythria Montealegrei n. sp.

Length 3 mm. Face almost entirely black. Anterior margin of vertex and upper margin of face broadly yellow. The vertex is strongly produced. Passing across its middle from eye to eye and arched cephalad is a narrow somewhat irregular blue-black band. In front of this band the vertex is orange, behind it reddish. The pronotum is orange colored with an irregular blue-black band just within anterior margin. The scutellum is orange with a very broad longitudinal blue-black band. Basal two-thirds of elytra orange, the remainder faintly tinged with lemon yellow. On the elytra are blue or blue-black markings as follows: A small spot at base of

clavus, two large spots near middle which run together on claval suture, a spot at base of corium, a narrow band which starts on basal fourth of costa, passes obliquely inward and distad to radial cell, thence obliquely outward and distad to costa. from which point a broad band crosses the elytron to apex of clavus.

Collected at Champerico, Guatemala, and at Managua, Nicaragua, by the author. One of the most beautiful Typhlocybrids seen in Central America. Named for Senor Don Abraham Montealegre, a Nicaraguan gentleman living in Chinandega, and former Italian vice-consul, with whom I lived for a time and from whom I had many favors.

***Erythria Deschoni* n. sp.**

Length 3 mm. Head and thorax pale brown, the anterior margin of the strongly produced vertex yellowish. The vertex has three faint whitish longitudinal lines, one median, and two lateral oblique ones near it. Around anterior margin of pronotum are a number of minute white dots. The scutellum also shows faint white lines as on vertex. The elytra are clear yellowish brown throughout, the clavus along claval suture being somewhat decolored. Venter yellowish. Tergum black.

Collected at Managua, Nicaragua, by the author. Named for Mr. Edward Deschon who, although a Nicaraguan gentleman by birth, was educated in the United States. To him I am indebted for many kindnesses and much valuable information.

NEW TYPHLOCYBINI.

C. F. BAKER.

***Alebra sanguinolinea* n. sp.**

Length 3.25 mm. Head large, somewhat tumid, strongly pointed in front, the vertex rather narrow, longer than wide. Color pale yellowish with intensely blood-red markings.

Vertex with two small golden arcs just before apex. Propleura and costa near base each with a small red dot. A broad red band extends entirely around anterior and lateral borders of pronotum, then follows claval suture half its length, where the two limbs cross the clavus and join at the commissure. A red band starts near base of clavus and extends to near middle of claval suture where it is clavate. A third red band starts near middle of costa and extends obliquely to near distal end of brachial cell. The transverse veins between apical and anteapical cells are red. The apical cells are smoky with a single transparent spot in each. There

are transparent, smoky bordered spots in apical portion of each antepical cell. Near the middle of the costa between the lateral red bands is a lemon yellow area, and another occurs in apical portion of clavus. The tergum, except for small lateral portions, is black.

Collected at San Marcos, Nicaragua, by the author.

***Protalebra Nicaraguensis* n. sp.**

Length 3.5 mm. Vertex strongly angled in front. Hind margin of last ventral segment of female broadly notched, with a large rectangular tooth which does not exceed lateral angles of the segment. Color lemon yellow, paler on face and margins of vertex, and on lateral angles of pronotum. The scutel becomes white caudad, the extreme apex black. The elytra are glistening yellowish, more transparent apically where the margin is narrowly smoky. A round dot on cubital nerve, a transverse stripe on middle of clavus, a transverse band at apex of brachial area, and another still larger transverse band across the two inner apical cells, fuliginous.

Collected at San Marcos, Nicaragua, by the author.

***Protalebra transversalis* n. sp.**

Length 3 mm. Head pale yellowish. Pronotum, except lateral angles, pale brown. Elytra glistening yellowish to the transverse veins. Starting at middle of costa, a fuliginous band extends entirely across both elytra. This band is narrow and deeply colored at the costa, paler and much broader within where it is extended along the inner margin of clavus to and around the basal angle. The area of the apical cells is fuliginous, with a transverse band just back of apex and a spot at base of inner apical cell transparent. The form of the apical cells is quite peculiar. The inner terminal vein is lacking, throwing the two inner apical cells together in one very large cell.

Collected at Acapulco, Mexico, by the author.

***Protalebra maculata* n. sp.**

Length 2.5 mm. Blackish, with ivory white or yellowish markings. Vertex broad and obtusely angled in front. Hind margin of last ventral segment of female truncate.

Face dark brown below, black above where there are two transverse yellow stripes, the lower passing on to basal joints of antennae, and having, where it crosses the front, several brown dots. The apex of vertex is black; back of this black apex is a transverse yellow band enlarged at center into a diamond shape, and at sides passing down to join the upper band on face. There are two large yellow spots at posterior angles of vertex.

The pronotum is black with a narrow white margin. On its disc anteriorly is a large rounded white spot, and on either side of center are two more, connected by a lozenge shaped white spot. The scutellum, except lateral angles and a median spot next pronotum, is white. The elytra are dark fuliginous. In basal half of clavus are three white spots, the middle largest, the distal sometimes broken in two. There is a small white dot at the apex of the clavus, another just beyond tip of clavus, a large one on distal end of brachial vein and a smaller one at proximal end of the anteapical cell. The veins surrounding the middle anteapical cell are white. A small area across the two inner anteapical cells, a small area in each of the two outer apicals and the outer anteapical cell, transparent. A small space at apex of elytra and three small spaces along the costa proximally, white.

Collected by the author at San Marcos and at Managua in Western Nicaragua.

***Protalebra octolineata* n. sp.**

Length 3 mm. Pale golden yellow above, whitish beneath. Head without markings. Three more or less distinct longitudinal lines on pronotum, the middle extending on to scutellum where it is much more deeply colored. The elytra are unevenly glistening yellow proximally, transparent distally. Each elytron on basal two-thirds bears four dark longitudinal lines about equidistant, one passing along costa, one along cubital vein, one through the clavus and one along outer claval margin; the two inner curve toward each other distally and join, as do also the two outer. Area of apical cells slightly smoky, with two narrow darker bands apically; one spot in outer and another in inner apical cell, dark brown. Hind margin of last ventral segment truncate with a transverse black mark at center.

Collected in considerable numbers at San Marcos and Managua in Nicaragua and at Champerico, Guatemala, by the author.

***Eualebra notata* n. sp.**

Length 3 mm. Golden yellow, the face brownish, and the anterior margin of vertex lighter laterally. At base of vertex on the median line is a large rounded black spot. On either side of the paler apex of the scutellum is a small black dot. Another black dot occurs at extreme base of elytron. Elytra very pale smoky with pinkish suffusions especially along the principal veins.

Collected at Champerico, Guatemala, by the author.

***Empoasca lineata* n. sp.**

Length 3.5 mm. Vertex rather strongly obtusely angled. Color pale green, the legs bluish green distally. Two broad golden yellow

low bands cross the vertex longitudinally next the eyes and pass caudad across the pronotum; a band follows the claval margin of elytra from base, around the angle, and to two-thirds its length. Another broad golden yellow band passes along the claval suture. Another band, very indistinct, appears on the middle of the corium. The elytra, except veins, become transparent distally.

Collected at San Marcos, Nicaragua, by the author.

Eupteryx quinquemaculata n. sp.

Length 3.25 mm. Sordid white, yellowish on face, middle of vertex, scutel and bases of elytra. The front below has many broadly interrupted brown arcs and above near center two round black spots. A round black spot occurs on either side of apex of vertex and another on the median line near base. Two small black dots occur near middle of anterior margin of pronotum and two still smaller occur on either side caudad of these. A large area in middle of pronotum posteriorly, is darkened. The elytra are nearly transparent with the veins smoky margined. Three small fuliginous areas occur in the clavus and another at the middle of the brachial cell. There are two small dark dots near the costa proximally, two larger still darker ones near costa at middle, and one small one at tip of middle apical cell.

Collected at Stanford University, California, by the author. This is the third American species of this genus.

Typhlocyba pseudo-maculata n. sp.

Length 2.5 mm. With the general appearance of *maculata*, but much smaller, the vertex much narrower and far more strongly produced. Color milky white, with golden markings. On the vertex there are two longitudinal bands next the eyes, which do not join at the apex. On the pronotum there are four longitudinal bands, two on sides and two near the middle, the latter converging toward the hind margin. Lateral angles of scutel golden. Three spots on claval margin, one before the angle and two beyond. On the corium occur two oblique golden stripes, one at basal fourth and one at half the length, both extending from costa inward and backward. The veins apically are faintly smoky margined, and at base of middle apical cell occurs a round black dot.

Collected at Champerico, Guatemala, by the author.

Typhlocyba verticis n. sp.

Length 3 mm. Peculiar among Typhlocybrids because of the extensive vertex, which is not only broad but strongly angularly produced as in *Deltoccephalus*.

Color pale yellowish, the head and pronotum without markings. Clavus and corium at base, golden. On middle of corium is a large

rounded milk white area partly surrounded by a more or less imperfect carmine border which is more distinct near the costa. Some of the apical veins are smoky bordered and at the base of one of the apical cells is a large round black dot.

Collected at Managua, Nicaragua, by the author.

***Typhlocyba pseudo=obliqua* n. sp.**

Length 3.5 mm. Color very pale yellowish with red markings. Two separate longitudinal bands on vertex next eyes are extended straight caudad across pronotum. Lateral margins of pronotum red. Lateral angles of scutellum and a median line red. A transverse red band passes across clavus just proximad of the angle. An oblique red stripe starts from basal fourth of costa and passes across apical third of clavus. Another red stripe starts from half of costa and runs obliquely to distal point of clavus. Elytra translucent proximally, but transparent distally.

Collected at Managua, Nicaragua, by the author. Like *obliqua* in general appearance, but smaller, and the markings arranged very differently.

***Typhlocyba bimaculata* n. sp.**

I had set this species aside as a *Cicadula*. It had the general habitus of that genus, also the general color of some *Cicadula*, and seemed too large and coarse for a *Typhlocybid*. But the venation is that of *Typhlocyba*, even to the absence of a marginal vein in the wings.

Length 3.5 mm. Color yellowish, the pronotum darker. Two large round black spots occur on the short, broadly rounded vertex. Two rounded black spots occur near basal angles of scutellum. Area of apical cells transparent; the rest of the elytron golden translucent. Tergum mostly black. Hind margin of last ventral segment of female roundly produced at middle where it is brown.

Collected at Champerico, Guatemala, and at Acapulco, Mexico, by the author.

NOTES ON MACROPSIS.

C. F. BAKER.

In *Psyche*, Vol. IX, p. 55, I described *Macropsis idioceroides*, which of known genera could only be placed in *Macropsis*. From that genus it differed in some very striking characters, notably in the position of the lateral

pronotal carina, which does not reach the eye but curves far down on to the pleura. The head is very little, if any, narrower than pronotum. The clypeus is strongly convex, very broad at base, suddenly strongly narrowed beyond the middle to the rounded apex. In these characters it is entirely distinct from all true *Macropsis* and I here separate it as the type of a new genus, *Straganiopsis*.

Since writing on *Macropsis* in Psyche, I have collected considerable additional material in Nevada, California and Central America. I have already presented a reply to Ball's criticism of my paper. Further study of new material has afforded abundant additional evidence that some of Ball's speculations concerning the species are most ill-founded.

The species *humilis* and *misella* were described by Stal from Mexico, the latter from Vera Cruz. No structural characters of specific value are given in the descriptions. The length of both species is given as 4 mm. Colors only are described and these are certainly somewhat variable in this genus as in most Jassidæ just as Ball says. The types are probably in existence and should be given careful examination and description. Ball's reference of *rufoscutellata* to *misella* would also warrant, and more plausibly, the reduction of some forms of *robusta* also. In 1902 I collected in Nevada a good series of *rufoscutellata* fairly typical and uniform in characters, and I again insist that there is no evidence whatever to indicate that it is more closely related to *misella* than are several other species.

The reference of *atra*, *magna* and *Californica* to *humilis* is still more uncertain and ill-advised and would suggest the possibility of aggregating all *Macropsis* into one species. Not only are *atra*, *magna* and *Californica* widely distinct from each other and from *humilis* in coloration, but the three former present a number of pronounced structural differences, and are very dissimilar in size. *Humilis* is characterized by colors only, with a length of 4 mm. There would be far better reason for reducing Stal's *pallescens* (which I have collected in Nicaragua) to *humilis*, and Ball should have done it, to be consistent. It becomes

somewhat humorous, when, after indicating that the three species in question have not even specific value, he describes a var. *paeta*, "suffused with reddish," of the species *laeta*. Just so we might have a var. *nigra* of many Jassids and a var. *albiflora* of most plants with colored flowers. For any who may wish to compare the species *atra*, *magna* and *Californica* with each other and with the descriptions of *humilis* and *misella*, I transcribe these latter from the original source.

"513 *Stragania humilis* Stal.

Griseo-albida; fronte, loris, medio verticis thoracisque, scutello, apice excepto, macula magna laterali mesostethii basique coxarum posticarum nigris; tegminibus breviter fusco-pilosis; capite thorace vix angustiore. Fem. Long. 4 mill. (Coll. Signoret.)

514 *Stragania misella* Stal.

Flavo-testacea, subtus cum pedibus stramineo-albida; tegminibus sordide hyalinis, fusco-pilosulis, scutello, clavo, apice excepto, maculaque subapicali dorsi abdominis nigris; scutelli maculis discoidalibus flavo-testaceis; capite thoracis parte posteriore paullo angustiore. Mas. Long. 4 mill. Vera Crus. (Mus. Holm.)"

***Macropsis Nicaraguensis* n. sp.**

Female. Length 4.5 mm. Vertex evenly rounded, of equal length throughout its breadth. Clypeus parallel sided, the apex broadly rounded. Margins of ledges over antennal grooves strongly oblique. Front just above clypeus nearly smooth. Pronotum with the usual aciculations. Hairs on basal third of elytra very pale brownish and rather weak, on apical two-thirds (except area of apical cells) much stronger and black.

Color very variable. Ground color sordid straw color, sometimes somewhat greenish. A small area on hind margin of pronotum usually darker, sometimes even black. Basal angles of scutellum dark, sometimes blackish. A spot at middle of claval margin and sometimes whole basal half of clavus brown to black. Extreme tip of clavus usually dark.

Last ventral segment with a broad deep evenly rounded emargination, at the center of which is a slight rounded projection which with adjacent margin is red brown.

Collected at San Marcos, Nicaragua, by the author.

Macropsis Franciscana n. sp.

Female. Length 4.25 mm. Resembling *rufoscutellata*, but shorter for the breadth. Vertex slightly produced at middle. Clypeus with sides gradually converging towards apex. Margins of ledges over antennal grooves nearly in a straight line, but slightly oblique. Front just above clypeus distinctly aciculate. Pronotum with the usual aciculations. Impressed line on middle of scutel gently curved, not angled at middle. Basal half of clavus with adjoining portion of brachial cell, bearing numerous minute white hairs. The remainder of corium, except apical cells, bears black hairs. The first (inner) apical cell is smaller than second.

Color pale green with a yellowish tinge. Scutel yellowish, the impressed line often darker. Clavus bordering scutel and to beyond inner angle, red brown.

Last ventral segment broadly, evenly, deeply emarginate, with a small triangular projection at center.

Collected at various points in San Mateo and Santa Clara counties in California, by the author. Evidently the West Coast representative of *rufoscutellata* but of different proportions, details of structure, and color.



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INVERTEBRATA PACIFICA

Contributions from and through Department of Biology, Pomona College.

EDITED BY C. F. BAKER, CLAREMONT, CAL.

ORTHOPTERA

FIRST DECADE OF ORTHOPTERA ISSUED IN THE
"INVERTEBRATA PACIFICA" SERIES.

C. F. BAKER.

The first decade of Orthoptera now being issued to subscribers contains four new species, Professor Morse's descriptions of which are quoted in this paper. He is also authority for all the determinations. All the material for this first decade was collected in Ormsby county, Nevada, by my wife and myself. We took all these, together with others, in the lower edge of the pine zone west of Carson City, among pine groves and sage brush openings at from 1700 to 2000 metres. This first decade is as follows:

- 17. *Cordillacris affinis* Morse n. sp.
- 15. *Stenobothrus acutus* Morse n. sp.
- 20. *Bruneria shastana* Scud.
- 310. *Aulocara elliotii* Thos.
- 307. *Hippiscus neglectus* Thos.
- 5. *Trimerotropis juliana* Scudd.
- 6. *Trimerotropis bifasciata* Mc N.
- 18. *Hesperotettix Nevadensis* Morse n. sp.
- 19. *Oedaleonotus. enigma* Scudd.
- 24. *Bradynotes compacta* Morse n. sp.

Of these No. 310 was abundant, Nos. 6, 307 and 19 were fairly common, Nos. 17, 15, 20, 5 and 18 were infrequent and local. Perhaps the most interesting species is

No. 24, the new *Bradynotes*. This was found common in the sage brush after we became familiar with its habits. It is wingless and a poor jumper, but expert at "playing possum." When the bush is jarred it drops at once and lies on the ground with legs folded against the body. In this condition it is very difficult to find.

ADDITIONAL NOTES ON PACIFIC COAST ORTHOPTERA.

C. F. BAKER.

Of the past year's collecting in Nevada, Middle Western California, Southern California and Western Nicaragua, but a small number of species have been determined, though practically all are in the hands of specialists.

Besides the Nevada species to be issued in the first decade, there were also collected in the same locality *Camnula pellucida* Scudd., very common; one of the "Jerusalem Crickets", *Cacopteris inermis* Scudd. common; *Trimerotropis fallax* Sauss., and *Xiphidium occidentale* Morse, occasional; under boards, logs, and stones the curious *Stenopelmatus longispina* Brunn., occurred frequently. Some of the Nevada *Melanopli* are still undetermined.

At Stanford University, California, I found *Melanoplus devastator* Scudd., and *M. nanus* Scudd. fairly common and in about equal numbers. *Xiphidium occidentale* Morse is also not uncommon there. Under boards, logs and stones at Stanford there may frequently be found the very interesting *Ceuthophili*—*C. pacificus* Thom., and *C. henshawii* Scudd.

NEW ORTHOPTERA FROM NEVADA.

ALBERT P. MORSE, WELLESLEY, MASS.

(This article appeared originally in *Psyche*, Vol. X., No. 323, p. 115, June, 1903.

"*CORDILLACRIS AFFINIS*, sp. nov.

One male, five females, Ormsby Co., Nev., July 6. These specimens agree in size, general form, proportions, and markings with

C. occipitalis, but differ as follows: the front margin of the scutellum of the vertex is farther removed from the apex and external margin of the vertex, being nearer a line drawn at the level of the front margin of the eyes than to the apex of the vertex—in *occipitalis* the reverse is true,—and the fuscous stripe on the dorsal part of the outer face of the hind femora is broken up into narrow transverse fasciae. The name CORDILLACRIS has been proposed by Rehn (Can. ent., vol. 33, p. 271) to replace ALPHA (Brunner, Rev. syst. orth., p. 121, 1893) which is preoccupied in Hymenoptera.

STENOBOTHRUS ACUTUS, sp. nov.

Five males, Ormsby Co., Nev., July 6. Closely allied to *St. curtipennis* but differing in having the vertex more produced and the angle of its sides more acute; the facial costa is also wider and scarcely or not at all narrowed opposite the median ocellus. The lateral foveolae are deep and very distinct, and the antennae average shorter (in the specimens seen). Possibly it is but a geographical race but in either case it seems worthy of a name.

Antenna, 8.5–9.5; hind fem.: 11–12; tegmina: 10–12; total length: 16–17.5 mm. The tegmina equal the abdomen.

HESPEROTETTIX NEVADENSIS, sp. nov.

Three males, three females, Ormsby Co., Nev., July 6. Very similar to *H. brevipennis*, the female somewhat smaller, differing in ornamentation and slightly in structure, the vertex being a very little narrower between the eyes, and the tegmina relatively shorter, especially in the male. The tegmina in both sexes are about one and one-third times as long as the exposed portion of the abdomen (in *brevipennis* nearly or quite covering abdomen, particularly in male). General color pea-green, ranging (in male at least) to rusty brown, and varied with pale yellow stripes on mid-carina and on anterior portion of lateral carinae of pronotum, on meso- and metapleura, lower margin of genae, lower margin of outer face of hind femora, and on the veins of the tegmina, especially the posterior ulnar. Hind femora with ferruginous annulus above knee, in brown male showing indications of two obliquely transverse fuscous fasciae. Hind tibiae bluish green, paler at tip. Fuscous marking and cloudings are also present in varying degree on the lateral lobes of the pronotum and along the margins of the median dorsal pale stripe. on the vertex and occiput, the meso- and metapleura, and the geniculations of the hind femora. The anterior and middle femora are ferruginous.

Antenna: male, 7; female, 7; hind fem: male, 9; female, 11.5–12.5; tegmina: male, 6.3–6.7; female, 8.5–9; total length: male, 16; female, 21 mm.

BRADYNOTES COMPACTA, sp. nov.

Four males, four females, Ormsby Co., Nev., July 6.

Nearly allied to *B. obesa*, differing from that species in its smaller size, the structure of the pronotum, the less upturned end

of the abdomen, and in the form of the supra-anal plate of the male. In *obesa* this plate is as wide as long, in *compacta* it is distinctly longer than wide. The lateral carinae of the pronotum are equally as distinct or even better developed than in *obesa* and less irregular in course, in *obesa* being broken or angulate at the anterior and middle sulci, forming two pairs of lines, diverging posteriorly, while in *compacta* they form essentially but one pair of divergent lines though somewhat sinuous (female) or subangulate (male) at the crossing of the sulci.

Antenna: male, 7; female, 7; hind fem.: male, 10-10.6; female, 10.5-11.5; pronotum: male, 3.7-4.2; female, 4.2-4.5; total length: male, 18-19.5; female, 20-25 mm.

Pages 1-12 of Volume I relate wholly to the Homoptera and contain the following articles:

1. On the *Gnathodus* species of the *abdominalis* group.
2. A new genus of the Typhlocybini.
3. The genus *Erythria* in America.
4. New Typhlocybini.
5. Notes on *Macropsis*. ALL BY C. F. BAKER.

Three new genera are characterized and twenty-six new species described. The price of this part is twenty-five cents.

The price of the present part, pages 13-16, is ten cents.



VOL. 1, PP. 17-40.

FEBRUARY 10, 1904.

INVERTEBRATA PACIFICA

Contributions from and through Department of Biology, Pomona College.

EDITED BY C. F. BAKER, CLAREMONT, CALIFORNIA.

DIPTERA

REPORTS ON CALIFORNIAN AND NEVADAN DIPTERA, I.

C. F. BAKER.

Only through the kindly interest of Mr. D. W. Coquillett of the National Museum, does it become possible to publish these first results of the collection of the past year, at this time. Acknowledgments are also due Prof. J. M. Aldrich for the determination of most of the Dolichopodidae.

The material recorded herein was all collected in three regions, Ormsby County, Nevada, the vicinity of Stanford University, California, and about Claremont, Los Angeles County, California. The work done so far has been anything but thorough, and taken all together represents but very few hours actual labor. Indeed, the results are but a by-product of other very pressing work. It will be noted that the Stanford material is composed entirely of vernal and autumnal species, since I have never been there through the midsummer.

All the Nevadan material was taken by my wife or myself about our summer camp in the head of King's Canyon west of Carson City. The tents were placed just within the pines. Near them, in a tangled patch of willows and alders, welled up a small spring which supplied a few acres of meadow on the hillside below. Quite a variety of herbaceous plants grew in this vicinity. On the other side a few steps carried one among the sage and rabbit-brush (*Chrysothamnus*). Even though so manifestly incomplete, still the comparison of these collections is very

interesting, the Californian from west of the Sierras and the Nevadan from close up on the eastern slope.

The vicinity of Stanford University furnishes a wealth of Diptera which I have not seen equalled anywhere in the West. There are ponds, streams, rich woods, pastures, and finally salt marshes, all near by. The richness of the region may be inferred from the large number of new species resulting from the small amount of very superficial work done by me.

At Claremont and vicinity, in the typical Southern California country, work has just begun. It will be continued with unremitting perseverance in both California and Nevada.*

MYCETOPHILIDAE.

1728 *BOLITOPHILA HYBRIDA* Meig. Stanford University.

82 *MYCETOPHILA OBSCURA* Walk. Stanford University. This species was abundant about Lagunita in the early spring.

1729 *Mycetophila trifasciata* Coquillett, new species.

Head black, antennae brown, the base yellow. Mesonotum reddish brown, opaque, the narrow front margin and broad front angles yellow, its short hairs yellow, the lateral bristles brown, pleura black and with a few small yellow spots, pteropleura bearing a row of black bristles, scutellum chiefly yellow. Abdomen black, the genitalia yellow. Legs and halteres yellow, apices of tarsi, of middle and hind coxae and of their tibiae, also apices of hind femora, black; middle and hind tibiae bearing two rows of black bristles on their outer sides, the middle tibiae with two long bristles near the middle of the inner side. Wings hyaline, and marked with three brown cross-bands; the first band begins on the costa and extends into the second basal cell, passing over the small crossvein; a large brownish spot behind the fifth vein appears to represent the continuation of this band; the second band crosses the wing from just before apex of the first vein to apices of forks of the fifth vein, filling the cell formed by these forks, behind which it is abruptly narrowed to about half its previous width; the third band fills the apex of the wing from a short distance beyond apex of first vein to apex of upper branch of fifth vein; the latter vein forks far beyond the forking of the fourth, its forks rather narrowly sepa-

*A list of the first century of Diptera to be issued in the Invertebrata Pacifica series will be published before long, with the first report on Nicaraguan Diptera collected last winter.

rated, converging toward their apices. Length 2.5 mm. Five males. Stanford University, California. Type No. 7665, U. S. National Museum.

1730 **Mycetophila fenestrata** Coquillett, new species.

Near *trifasciata*, but differing as follows: No brown coloring at apex of any coxa or femur, inner side of middle tibiae with a single short bristle near the middle. Wings having the first brown band not beginning at the costa, but at the first vein, the brown spot behind the fifth vein very faint, the second band coalesces with the third along the costa and again along the forks of the fourth vein, enclosing an oval hyaline spot just below the third vein; neither of these two bands pass beyond the lower fork of the fourth vein, although the wing is faintly bordered with gray from the apex of this fork to a short distance beyond apex of lower fork of fifth vein; the latter vein forks only a short distance beyond the forking of the fourth, its two forks widely separated and not converging toward their apices. Length 3 mm. A single specimen. Stanford University, California. Type No. 7666, U. S. National Museum.

1731 **Neoempheria pullata** Coquillett, new species.

Brown, the first two joints of antennae, humeri, genitalia and legs, yellow, the latter changing to brownish toward apices of tarsi; antennae over twice as long as the head and thorax, joints of flagellum very elongate, the third joint of antennae about five times as long as wide; body opaque, the hairs and bristles black; bristles of tibiae shorter than greatest diameter of the latter; wings hyaline, pubescent, auxiliary vein terminates in the first slightly before middle of marginal cell, this cell about three times as long as wide, third vein strongly bowed forward, peduncle of second posterior cell about five times as long as the small crossvein, fifth vein forks at about one-fourth of distance from its base to the small crossvein. Length 3.5 mm. A male specimen. Stanford University, California. Type No. 7667, U. S. National Museum.

1732 **Sciophila calcarata** Coquillett, new species.

Black, the extreme base of third joint of antennae, halteres, genitalia largely, femora, tibiae and base of first joint of tarsi, yellow; third joint of antennae nearly three times as long as broad, the following joints longer than wide; body opaque, gray pruinose, mesonotum marked with three black vittae, the middle one divided medially by a gray line, hairs and bristles of thorax black; middle coxae bearing at apex of front side a forwardly directed, two-pointed spur which is almost half as long as the coxae; bristles of tibiae shorter than the greatest diameter of the latter; wings pubescent, hyaline, auxiliary vein terminates near middle of marginal cell, the subcostal crossvein slightly before the middle of this cell, the latter about one and one-half times as long

as broad, first and third veins strongly bowed forward, peduncle of second posterior cell about half as long as the anterior branch of the fourth vein, fifth vein forks slightly before base of first posterior cell. Length 4 mm. Ten males. Stanford University, California. Type No. 7668, U. S. National Museum.

CULICIDAE.

- 154 *CULEX INCIDENS* Thom. Ormsby County, Nevada.
 957 *CULEX CONSOBRINUS* Desv. Ormsby County, Nevada.
 958 *CULEX TARSALIS* Coq. Ormsby County, Nevada.

TIPULIDAE.

- 102 *HOLORUSIA GRANDIS* Bergroth. Ormsby County, Nevada.
 Common.

BIBIONIDAE.

- 566 *BIBIO HIRTUS* Lw. Stanford University.
 1733 *SCATOPSE NOTATA* L. Stanford University.
 129 *DILOPHUS BREVICEPS* Lw. Ormsby County, Nevada.
 1734 *Dilophus occipitalis* Coquillett, new species.

Black, a few indistinct spots on lower part of head, extreme base of antennae, prothorax except a streak each side, mesonotum, pleura except one or two spots and the lower portion, coxae and femora, yellow, stalks of halteres whitish; head narrow and elongate, about three-fourths as long as the thorax, cheeks about as wide as height of eyes, distance from upper end of eyes to highest point on the occiput about half the height of the eyes; body polished; hairs chiefly whitish; wings hyaline, stigma black; front tibiae bearing two whorls of spines, one above the middle, the other at the apex. Length 3 mm. A female specimen. Claremont, Los Angeles County, California. Type No. 7669, U. S. National Museum.

- 128 *DILOPHUS SERRATICOLLIS* Wlk. Ormsby County, Nevada.

LEPTIDAE.

- 1735 *SYMPHROMYIA JOHNSONI* Coq. Ormsby County, Nevada.
 1736 *SYMPHROMYIA LATIPALPIS* Bigot. Ormsby County, Nevada.
 88 *CHRYSOPILA PROXIMA* Wlk. Ormsby County, Nevada.
 1737 *CHRYSOPILA TESTACEIPES* Bigot. Ormsby County, Nevada.
 1738 *Leptis flavonigra* Coquillett, new species.

Black, the apex of scutellum, halteres, tibiae, apices of front and middle femora and bases of their tarsi, also the abdomen, yellow, a large spot on sides of the fourth and fifth segments, the ventral portion of these segments and nearly the whole of the fol-

lowing segments, black; sides of face whitish pilose, hairs of body chiefly black; mesonotum dark gray pruinose, two vittae and the lateral margins whitish gray pruinose; wings hyaline, tinged with yellowish at base and along the costa, stigma brownish. Length 7 mm. A female specimen. Type No. 6708. U. S. National Museum. Ormsby County, Nevada.

565 *LEPTIS INCISA* Lw. Stanford University.

1739 ***Pheneus opacus*** Coquillet, new species.

Black, the first two joints of antennae, proboscis, bases of segments two to six of abdomen, stems of halteres, coxae, front and middle femora and their tibiae, also bases of tarsi, yellow, the very elongate hind femora and tibiae dark brown; head gray pruinose, face and lower part of front slightly over twice as wide as distance between the posterior ocelli, front greatly widening towards the vertex, at the lowest ocellus twice as wide as at lower edge; first joint of antennae one and one-half times as long as the second, the latter almost as long as the third, the two last mentioned joints slightly wider than long, arista nearly one and one-half times as long as the antennae proper, indistinctly three-jointed, the first joint twice as long as wide, the second slightly over twice as long as the first, the two together two-thirds as long as remainder of arista; occiput strongly convex; thorax opaque, grayish pruinose, mesonotum marked with three blackish vittae, the median one divided by a gray line; abdomen polished; wings hyaline, veins black, fourth posterior cell closed in one wing but distinctly open on the other, anal cell narrowly open. Length 5 mm. A male specimen. Type No. 6707, U. S. National Museum. Ormsby County, Nevada.

STRATIOMYIDAE.

133 *SARGUS VIRIDIS* Say. Ormsby County, Nevada and Stanford University.

134 *BERIS ANNULIFERA* Bigot. Ormsby County, Nevada.

738 *STRATIOMYS MACULOSA* Lw. Ormsby County, Nevada:

24 *ODONTOMYIA ARCUATA* Say. Stanford University.

736 *ODONTOMYIA BINOTATA* Lw. Stanford University.

970 *ODONTOMYIA INAEQUALIS* Lw. Stanford University.

38 *NEMOTELUS TRISTIS* Bigot. Stanford University.

TABANIDAE.

1740 *CHRYSOPS NOCTIFER* OS. Stanford University.

109 *CHRYSOPS SURDUS* OS. Ormsby County, Nevada.

1741 ***Tabanus opacus*** Coquillet, new species.

Near *rhombicus*, but the frontal subcallus is gray pruinose, the gray spots of abdomen greater in number and extent, etc. Black,

the base of the third antennal joint and antearlar callosity reddish yellow, broad sides of second, third and fourth abdominal segments except a large spot on each, also a large portion of the venter and the tibiae except apical half of front ones, yellowish, palpi and knobs of halteres whitish; head wider than thorax, front of female strongly narrowed below, gray pruinose, the callous polished, shield shaped, a partially denuded oval spot above it connected by a narrow line, ocellar spot somewhat denuded but not elevated, eyes pubescent, purplish, each marked with two or three greenish bands, third joint of antennae broad, the upper angle blunt, palpi rather short and very robust, hairs of last joint chiefly black in the female, white in the male; mesonotum gray pruinose, marked with six black vittae, the hairs black and mixed with a few yellowish ones, hairs of pleura white, many black ones on the upper portion; segments two to six of abdomen each marked with three gray pruinose spots contiguous to the narrow gray hind margin, each spot extending across, or nearly across, the segment; wings subhyaline, a small faint brownish cloud at forking of the third vein, this fork not appendiculate, outer portion of first posterior cell with parallel sides. Length, male 12, female 15 mm. A specimen of each sex. Ormsby County, Nevada. Type No. 7319, U. S. National Museum.

114 *TABANUS PUNCTIFER* OS. Ormsby County, Nevada.

ASILIDAE.

155 *DIOCTRIA PUSIO* OS. Ormsby County, Nevada.

974 *SCLEROPOGON INQUINATUS* Lw. Ormsby County, Nevada.

104 *ERAX DUBIUS* Will. Ormsby County, Nevada.

105 *ASILUS CALLIDUS* Will. Ormsby County, Nevada.

1742 *ASILUS ANGUSTIFRONS* Will. Ormsby County, Nevada.

1018 *MALLOPHORA FAUTRIX* OS. Claremont, Los Angeles County, California.

BOMBYLIDAE.

1743 *EXOPROSOPA TITUBANS* OS. Ormsby County, Nevada.

1744 *SYSTOECHUS OREAS* OS. Ormsby County, Nevada.

116 *ANTHRAX MORIO* L. Ormsby County, Nevada.

1204 *PHTHIRIA SULPHUREA* Lw. Claremont, California and also in Ormsby County, Nevada.

1745 *GERON SUBAURATUS* Lw. Ormsby County, Nevada.

1746 *PANTARBES PUSIO* OS. Ormsby County, Nevada.

THEREVIDAE.

119 *PSILOCEPHALA COSTALIS* Lw. Ormsby County, Nevada.

117 *THEREVA DUPLICIS* Coq. Ormsby County, Nevada.

1747 ***Thereva flavicauda*** Coquillet, new species.

Black, the antennae, legs, halteres and apex of abdomen, yellow; apex of antennae brown, coxae, front femora except their apices, and basal half of middle femora black, apices of tarsi brown, a brown spot at bases of knobs of halteres; the yellow of abdomen occurs on hind margins of third, fourth and fifth segments and whole of the portion beyond the latter; front opaque, yellowish gray pruinose, a transverse pair of polished black spots near the middle, the hairs below the latter black, followed by yellowish white ones, like those of the face, first joint of antennae slightly longer than the third, the under side densely yellowish white pilose and bearing a few black bristles, third joint oval, twice as long as wide, about six times as long as the style; thorax bluish gray pruinose, mesonotum marked with two yellowish gray vittae, its hairs chiefly black; abdomen opaque, gray pruinose, the fifth and sixth segments slightly polished, the following two highly polished, hairs of abdomen almost wholly pale yellowish; wings grayish hyaline, veins indistinctly bordered with smoky, stigma indistinct, yellowish brown, a dark brown cloud at base of second submarginal cell and of each posterior cell, fourth posterior cell closed or narrowly open. Length 10 mm. Two female specimens. Ormsby County, Nevada. Type No, 6710, U. S. National Museum.

ACROCERIDAE.

1748 ***OGCODES MELAMPUS*** Lw. Ormsby County, Nevada.

1749 ***Acrocera bakeri*** Coquillet, new species.

Black, the four angles of the thorax, legs and halteres whitish, the prothoracic spiracle and abdomen orange yellow, the latter having the first segment, a fascia on the second expanded on the sides and extending across the venter, a small basal spot in middle of dorsum of the third and fourth segments, a large spot on each side of the third segment extending across the venter, in the middle of which it is greatly expanded, a small spot in basal angles of the fourth segment and a pair of spots on venter of this segment; black; tarsal claws and last tarsal joint except the base, also black; wing hyaline, veins black, calypteres wholly whitish hyaline. Length 5 mm. A female specimen. Ormsby County, Nevada. Type No. 6709, U. S. National Museum.

LONCHOPTERIDAE.

104 ***LONCHOPTERA LACUSTRIS*** Meig. Stanford University.

985 ***LONCHOPTERA LUTEA*** Panz. Stanford University and also in the mountains near Claremont, California (1205).

EMPIDIDAE.

1012 *EMPIS NUDA* Lw. Stanford University.

90 *RAMPHOMYIA COMPTA* Coq. Ormsby County, Nevada.

567 *RHAMPHOMYIA SUDIGERONIS* Coq. Stanford University.

568 *Rhamphomyia curvipes* Coquillet, new species.

Black, the palpi, halteres, legs and greater portion of sides of abdomen, also the venter, yellow, the hairs and bristles black; a black dot at apex of each trochanter, apices of tarsi brown, spiracles of thorax whitish, proboscis dark brown, slightly longer than height of head; face polished on lower part, the remainder thinly gray pruinose, eyes of male contiguous, the upper facets much larger than the lower, front of female thinly gray pruinose next the antennae, the remainder polished, third joint of antennae subconical, about twice as long as the style; thorax thinly gray pruinose, scutellum bearing two bristles, abdomen polished, compressed, hypopygium of male very small, the central filament hidden; legs slender, those of female nearly devoid of bristles except on outer side of hind tibiae, in the male the under side of middle femora on the basal two-thirds, and inner side of their tibiae, ciliate with nearly erect bristles, hind tibiae strongly bowed backwards below the middle, the inner side bare, the posterior-inner side on nearly its basal third, and the anterior-inner side on nearly its basal half ciliate with rather long bristles; wings of male hyaline, those of female pale smoky, stigma brown, venation normal, sixth vein prolonged to the wing-margin. Length 4 mm. Two males and two females. Stanford University. Type No. 7670, U. S. National Museum.

89 *BRACHYSTOMA OCCIDENTALIS* Melander. Ormsby County, Nevada.

1750 *EUHYBUS PURPUREUS* Walker. Ormsby County, Nevada.

1751 *CHELIFERA PALLORIS* Coq. Ormsby County, Nevada.

DOLICHOPODIDAE.

All determined by Prof. Aldrich, except as otherwise noted.

1014 *DOLICHOPUS AFFLICTUS* OS. Stanford University.

1017 *DOLICHOPUS CANALICULATUS* Thom. Ormsby County, Nevada.
Determined by Coquillet.

1752 *DOLICHOPUS COQUILLETII* Aldrich. Ormsby County, Nevada.

1015 *DOLICHOPUS CRENATUS* OS. Taken in abundance at Stanford University and in Ormsby County, Nevada: also at Claremont, California (1206).

1539 *DOLICHOPUS CUPRINUS* Lw. Ormsby County, Nevada.

1753 *DOLICHOPUS GRANDIS* OS. Ormsby County, Nevada.

1754 *DOLICHOPUS MYOSOTA* OS. Ormsby County, Nevada.

- 1540 *DOLICHOPUS OBCORDATUS* Aldrich. Ormsby County, Nevada.
 1755 *DOLICHOPUS PLUMIPES* Scop. Ormsby County, Nevada.
 1011 *DOLICHOPUS POLLEX* OS. Ormsby County, Nevada. Determined by Coquillet.
 1756 *DOLICHOPUS RAMIFER* Lw. Ormsby County, Nevada.
 1757 *HERCOSTOMUS UNICOLOR* Lw. Ormsby County, Nevada.
 1009 *CHRYSTOTUS SUBCOSTATUS* Lw. Stanford University. Determined by Coquillet.
 1758 *SCIAPUS FILICORNIS* Ald. Ormsby County, Nevada.
 158 *PSILOPUS MELAMPUS* OS. Ormsby County, Nevada.

SYRPHIDAE.

- 1759 *SPHYXIMORPHA TRIDENS* Lw. Ormsby County, Nevada.
 146 *CHRYSTOTOXUM LATERALE* Lw. Ormsby County, Nevada.
 137 *OMEGASYRPHUS (Microdon) BALIOPTERUS* Lw. Ormsby County, Nevada.
 149 *PARAGUS ANGUSTIFRONS* Lw. Ormsby County, Nevada, and also Stanford University (749).
 1760 *PARAGUS BICOLOR* Fabr. Ormsby County, Nevada.
 150 *PARAGUS TIBIALIS* Fall. Ormsby County, Nevada.
 756 *MYIOLEPTA VARIPES* Lw. Stanford University.
 1761 *CHRYSOGASTER BELLULA* Will. Ormsby County, Nevada, and also Stanford University.
 91 *CHRYSOGASTER NIGROVITTATA* Lw. Ormsby County, Nevada.
 1762 *CHRYSOGASTER STIGMATA* Will. Ormsby County, Nevada.
 1763 ***Cheilosia plumosa*** Coquillet, new species.
 Black, with a bluish tinge, the third joint of antennae except the apex reddish yellow, halteres light yellow; hairs on upper half of front rather long and black, those on the remainder short and chiefly whitish, upper part of face deeply excavated, the tubercle very prominent and rather pointed, sides of face bearing a series of whitish hairs, eyes bare, third joint of antennae rather large, ellipsoidal, arista rather sparsely long-plumose, hairs of body whitish, scutellum without black marginal bristles, abdomen polished; wings hyaline, the base and stigma yellowish, veins blackish, calypteres white. Length 5.5 mm. Ormsby County, Nevada. Type No. 6711, U. S. National Museum.
 1764 *CHEILOSIA PLUTONIA* Hunter. Ormsby County, Nevada.
 1765 *CHEILOSIA WILLISTONI* Shaw. Ormsby County, Nevada.
 995 *PIPIZA PISTICOIDES* Will. Stanford University.
 148 *MELANOSTOMA STEGNUM* Say. Ormsby County, Nevada, and also Stanford University (37).
 149 *BACCHA FASCIPENNIS* Wied. Ormsby County, Nevada.
 1541 *SYRITTA PIPIENS* L. Ormsby County, Nevada, and also Stanford University.

- 147 SYRPHUS AMERICANUS Wied. Ormsby County, Nevada, and also Stanford University (753).
 1766 SYRPHUS AMALOPIS OS. Ormsby County, Nevada.
 1767 LASIOPHTHICUS PYRASTRI L. Ormsby County, Nevada.
 563 MESOGRAMMA GEMINATA Say. Stanford University.
 152 MESOGRAMMA MARGINATA Say. Ormsby County, Nevada, and also Stanford University (18).
 151 SPHAEROPHORIA SULPHURIPES Thom. Ormsby County, Nevada, and also Stanford University (16).
 1220 VOLUCELLA MEXICANA Macq. In the mountains near Claremont, California, common on flowers of *Lepidospartum squamatum* in the Fall.
 13 ERISTALIS HIRTUS Lw. Stanford University.
 14 ERISTALIS TENAX L. Stanford University.
 1768 TROPIDIA QUADRATA Say. Stanford University.
 145 HELOPHILUS LATIFRONS Lw. Ormsby County, Nevada, and also at Stanford University.
 1769 HELOPHILUS MEXICANUS Macq. Ormsby County, Nevada, and also at Stanford University.
 1207 SPILOMYIA INTERRUPTA Will. In the mountains near Claremont, California.
 35 POLYDONTOMYIA CURVIPES Wied. Stanford University.

CONOPIDAE.

- 108 CONOPS SYLVOSUS Will. Ormsby County, Nevada.
 107 PHYSOCEPHALA AFFINIS Will. Ormsby County, Nevada, and also Stanford University.
 106 PHYSOCEPHALA BURGESSI Will. Ormsby County, Nevada.
 82 ZODION FULVIFRONS Say. Ormsby County, Nevada, and also Stanford University (41).
 80 OCCEMYA ABBREVIATA Lw. Ormsby County, Nevada, and also Stanford University (998).
 84 OCCEMYA BARONI Will. Ormsby County, Nevada, and also Stanford University (40).

AGROMYZIDAE.

- 1272 DESMOMETOPA HALTERALIS Coq. Claremont, California.
 1273 DESMOMETOPA M-NIGRUM Zett. Claremont, California.
 1770 LEUCOPIS BELLA Lw. Ormsby County, Nevada.
 1771 MILICHIA INDECORA Lw. Ormsby County, Nevada.

PIPUNCULIDAE.

- 1772 PIPUNCULUS ARIDUS Will. Stanford University.

PHORIDAE.

1773 PHORA RUFIPES Meig. Stanford University.

1774 TRINEURA ATERRIMA Fabr. Stanford University.

BORBORIDAE.

108 LIMOSINA FONTINALIS Fall. Stanford University.

78 BORBORUS EQUINUS Fall. Stanford University.

GEOMYZIDAE.

984 ANTHOMYZA VARIEGATA Lw. Stanford University.

99 BALIOPTERA LURIDA Lw. Stanford University, and also in Ormsby county, Nevada.

Zagonia Coquillet, new genus.

Near *Heterochroa*, but the cheeks wider than height of eyes, etc. Head slightly longer at insertion of antennae than at the vibrissae, face slightly convex, cheeks greatly widening posteriorly, the lower side of the head very oblique; occiput strongly convex, eyes bare, suborbicular, oblique, front slightly convex, wider than long, two pairs of vertical bristles, one of postvertical and of ocellar, two pairs of reclinate fronto-orbital bristles, front otherwise bare; antennae reaching less than half way to the oral margin, the third joint circular, arista basal, nearly bare, palpi clavate, proboscis very robust, scarcely half as long as height of head; body rather short and robust, mesonotum convex, five pairs of dorsocentral bristles, two of which are in front of the transverse groove, the hairs between them arranged in two rows, two pairs of supra-alar bristles, the anterior one in front of the groove, humeri apparently devoid of bristles, one posthumeral, one propleural, two sternopleural, one bristle and a few hairs near posterior upper angle of the mesopleura, scutellum bearing two pairs of bristles; legs rather short and robust, front femora bristly on the lower and posterior sides, preapical bristle present on the front and hind tibiae; auxiliary vein weak, extending close to the first, apex of the latter nearly opposite the small cross-vein, costa prolonged to apex of fourth vein, beset with distinct spines, apex of second vein about five times as far from apex of first as from that of the third, outer half of first posterior cell with nearly parallel sides, last section of fourth vein one-half longer than the preceding section, sixth vein prolonged nearly to the wing margin, second basal and anal cells complete. Type, the following species:

1775 **Zagonia flava** Coquillet, new species.

Yellow, including the hairs and bristles except those of the palpi and costa, third joint of antennae and apical portion of arista

black; wings yellowish gray. Length 2.5 mm. A single specimen. Stanford University, California. Type No. 7680, U. S. National Museum.

OSCINIDAE.

- 156 *MEROMYZA AMERICANA* Fh. Occurs in all three regions.
 39 *CHLOROPS ASSIMILIS* Macq. Stanford University.
 1776 *CHLOROPS CROCOTA* Lw. Ormsby County, Nevada.
 1778 *CHLOROPS LITURATA* Adams. Ormsby County, Nevada.
 1777 *CHLOROPS PROXIMA* Say. Stanford University.
 557 *CHLOROPS RUBIDA* Coq. Stanford University.
 1779 *ELACHIPTERA NIGRICEPS* Lw. Ormsby County, Nevada.
 105 *Hippelates microcentrus* Coquillet, new species.

Black, the lower part of front, sides of face, cheeks, palpi, extreme bases of tibiae, and the tarsi except their apices, yellowish, knobs of halteres white; frontal triangle polished, extending slightly below middle of front; thorax thinly gray pruinose, the pleura, except along the upper edge, polished, abdomen polished; spurs of hind tibiae rather small; wings hyaline, apex of second vein nearly twice as far from that of the first as from the third. Length 1.5 mm. Ten specimens. Stanford University. Type No. 7679, U. S. National Museum.

- 989 *OSCINIS TRIGRAMMA* Lw. Stanford University.
 1214 *MOSILLUS AENEUS* Fall. Claremont, California, and also in Ormsby County, Nevada.

EPHYDRIDAE.

- 1218 *OCHTHERA MANTIS* DeG. In the mountains near Claremont.
 93 *PELINA TRUNCATELLA* Lw. Ormsby county, Nevada.
 1271 *PELINA BREVIS* Wlk. In the mountains near Claremont, Cal.
 1780 *COENIA BISETOSA* Coq. Ormsby County, Nevada.
 1781 *PSILOPA COMPTA* Meig. Stanford University.
 102 *HYDRELLIA SCAPULARIS* Lw. Stanford University.
 987 *PELOMYIA OCCIDENTALIS* Will. Stanford University.

PSILIDAE.

- 1782 *Chyliza robusta* Coquillet, new species.

Black, the head except center and lower part of occiput, the antennae except the arista, the scutellum, coxae, broad apices of femora, and the tibiae, reddish yellow, tarsi pale yellow, halteres whitish, front yellowish brown; hairs pale yellow, the bristles black; face distinctly retreating below, occiput strongly projecting behind the eyes, flattened posteriorly; wings grayish hyaline, marginal cell dark gray, costal cell yellowish brown, third and fourth veins

distinctly converging toward their apices, apex of second vein almost twice as far as from apex of the third. Length 5 mm. A single specimen. Ormsby County, Nevada. Type No. 6717, U. S. National Museum.

ORTALIDAE.

19 *ACROSTICTA DICHROA* Lw. Stanford University.

131 *ANACAMPTA PYRRHOCEPHALA* Lw. Ormsby County, Nevada.

1783 *ANACAMPTA LATIUSCULA* Lw. Stanford University.

1784 *Melieria occidentalis* Coquillett, new species.

Black, the head except a central spot on occiput, the antennae, palpi, greater part of proboscis, scutellum, front coxae, femora, tibiae and bases of tarsi, yellow; arista distinctly pubescent; thorax yellowish gray pruinose, that on sides of mesonotum, pleura and scutellum more yellow, abdomen olive gray pruinose; wings hyaline, the hind margin beyond apex of sixth vein rather narrowly bordered with dark gray, a brown crossband extends from costa before apex of auxiliary vein to middle of discal cell near its base, its lower inner angle indistinctly prolonged into base of third posterior cell; a second brown band extends from costa just before apex of first vein to middle of discal cell, passing over the small crossvein; hind cross vein broadly bordered with brown, and above it is a brown spot, on the second vein, a brown streak along the costa in apex of marginal cell; apex of wings broadly bordered with brown, which color is prolonged over halfway to the small crossvein. Length 6 mm. A male specimen. Ormsby county, Nevada. Type No. 6714, U. S. National Museum.

TRYPETIDAE.

1785 *Spilographa inaequalis* Coquillett, new species.

Near *tortilis* but the small crossvein is situated distinctly beyond the apex of the first vein and the brown crossband which passes over it is widely separated from the one on the hind crossvein. Yellow, the abdomen reddish yellow, on ocellar dot and the basal segment of the ovipositor black, the latter only slightly longer than the last abdominal segment; bristles and hairs black, body polished; wings hyaline, anal cell and base of the first basal yellowish, a brownish crossband extends from forking of second and third veins to lower and outer angle of anal cell; an arcuate, uneven brown band extends from costa just before apex of first vein almost to center of third posterior cell, passing over the small crossvein; a second uneven band extends from costa nearly midway between apices of first and second veins to apex of fifth vein, passing over the hind crossvein; apex of wing broadly bordered with brown from before apex of second vein to beyond apex of fourth; small crossvein very slightly beyond middle of discal cell; Length 4 mm. A

female specimen. Ormsby county, Nevada. Type No. 6716, U. S. National Museum.

1208 *TRYPETA ACHILLEAE* Johnson. In the mountains near Claremont, California. "Not before known to occur west of the District of Columbia" (Coquillett).

1786 *TRYPETA OCCIDENTALIS* Snow. Ormsby County, Nevada.

1787 *ORDASPIS ANTHRACINA* Doane. Ormsby County, Nevada.

141 *ACIURA FERRUGINEA* Doane. Ormsby County, Nevada.

1788 *ACIURA LUTEA* Coq. Ormsby County, Nevada.

1789 *EUTRETA SPARSA* Wied. Ormsby County, Nevada.

140 *EUTRETA TRICOLOR* Snow. Ormsby County, Nevada.

22 *TEPHRITIS GEMELLA* Coq. Stanford University.

144 *TEPHRITIS GENALIS* Thom. Ormsby County, Nevada.

1790 *Tephritis palpalis* Coquillett, new species.

Black, the head and its members except the arista and a large spot on upper half of occiput, the halteres, genitalia and legs pale yellow; hairs of head and body whitish, the bristles black; palpi unusually broad, about half as wide as long, proboscis slender, the labella as long as the proboscis proper; body opaque, bluish gray pruinose; hairs and bristles of femora whitish, the short hairs of tibiae and tarsi chiefly black; wings whitish hyaline, crossed by two brown bands which contain many yellowish dots; the first band extends from humeral crossvein to slightly beyond apex of first vein, then turns and crosses the wing obliquely, passing over the small and hind crossveins, the portion along the costa filling the space between the latter and the fourth vein except an elongated spot along the fourth vein beyond middle of first basal cell; stigma with a yellow spot in its base and a yellow dot beyond its middle; the second band fills apex of wing from before apex of second vein to beyond apex of the fourth. Length 3 mm. A male specimen. Ormsby County, Nevada. Type No. 6716, U. S. National Museum.

143 *TEPHRITIS PICCIOLA* Coq. Ormsby County, Nevada.

139 *TEPHRITIS VARIABILIS* Doane. Ormsby County, Nevada.

138 *EUARESTA ABSTERSA* Lw. Ormsby County, Nevada. Taken also at Stanford University and in the mountains near Claremont, California (1211).

564 *Euaresta adspersa* Coquillett, new species.

Head whitish, front except the margins yellow, a large grayish black spot above the center of the occiput, antennae black, the first joint whitish, the second and base of third yellowish brown, base of arista yellow, followed by white, the apex brown; palpi white, proboscis yellow, robust. Thorax black, gray pruinose, scutellum yellow, bearing four bristles. Abdomen yellow, indistinctly marked with grayish black toward the apex, ovipositor black, nearly as long as the last three segments of the abdomen. Legs and halteres yellow. All hairs and bristles yellow or whitish,

several at apices of tibiae and on under side of tarsi black. Wings black and with large whitish hyaline drops and markings; base of wing to apex of auxiliary vein hyaline and with only a few black spots, one crossing first costal cell near the middle, a larger one crossing middle of first and second basal cells; stigma black and with a whitish spot filling nearly its basal half, three hyaline spots between apices of first and second veins alternating with two in the submarginal cell, a single hyaline spot in apex of this cell, first posterior cell with a hyaline spot near base, another in apex and a pair before the latter; second posterior, discal and first basal cells each containing three hyaline spots. Length 3 to 3.5 mm. Two males and two females. Stanford University, California. Type No. 7678, U. S. National Museum.

- 136 *EUARESTA ARANEOSA* Coq. Ormsby County, Nevada. Taken also at Stanford University (1986), and in the mountains near Claremont, California (1210).
 1209 *EUARESTA BELLA* Lw. In the mountains near Claremont, California.
 1791 *EUARESTA RUFIPENNIS* Doane. Stanford University.
 1792 *EUARESTA WEBBII* Doane. Ormsby County, Nevada.
 137 *URELLIA MAVERNA* Wlk. Ormsby County, Nevada, and also at Stanford University, California.
 1793 *URELLIA STIGMATICA* Coq. Ormsby County, Nevada.

SAPROMYZIDAE.

- 994 *LONCHAEA POLITA* Say. Stanford University.
 110 *PALLOPTERA JUCUNDA* Lw. Ormsby County, Nevada.
 1794 *Sapromyza caesia* Coquillett, new species.

Head yellow, upper part of occiput and the vertex black, bluish gray pruinose, a brown fascia crosses the front near the middle and a spot of the same color extends from each antennae to the adjacent eye; antennae yellow, the third joint ellipsoidal, about one and one-half times as long as wide, arista rather long plumose, brown, the base yellow; face in profile nearly straight and with a transverse furrow a short distance above the oral margin; proboscis brown, palpi yellow. Body black, bluish gray pruinose, a black fascia at base of segments three, four and five of the abdomen; two pairs of dorso-central bristles, the hairs between them arranged in six somewhat irregular rows. Legs, black, the coxae chiefly, the apices of middle femora, their tibiae except the apices, the base and a median ring on the hind tibiae, extreme base of front tarsi and the whole of the others except their apices, yellow. Wings hyaline, veins yellowish brown, calypteres and halteres yellow. Length 4 mm. A single specimen. Ormsby County, Nevada. Type No. 7676, U. S. National Museum.

- 983 *SAPROMYZA CONNEXA* Say. Stanford University.

- 20 *SAPROMYZA FLAVEOLA* Coq. Stanford University, and also in the mountains near Claremont, California.
- 1216 *SAPROMYZA LIVINGSTONII* Coq. In the mountains near Claremont, California, and also in Ormsby County, Nevada.
- 555 *SAPROMYZA NOTATA* Fall. Stanford University. Taken also in the mountains near Claremont, California, and in Ormsby County, Nevada.
- 120 *SAPROMYZA PLANISCUTA* Thom. Stanford University, and also Ormsby county, Nevada.
- 1795 *Sapromyza univittata* Coquillett, new species.

Yellow, an ocellar dot, spot near center of occiput, a broad vitta on mesonotum extending from front end almost to the scutellum, an indistinct dot midway between each humerus and this vitta, a spot in middle of first and second segments of abdomen and a widely interrupted fascia on base of each of the remaining segments, black, a rather indistinct brown spot on upper part of face adjoining each eye and a pair of brown dots at extreme apex of each hind femur, hairs and bristles except those on the calypteres, black. Third joint of antennae ellipsoidal, about one and one-half times as long as wide, arista long plumose. Face in profile almost straight. Body thinly grayish pruinose, four pairs of dorsocentral bristles, all of them behind the suture, the hairs between them arranged in four rows. Wings hyaline, the veins chiefly brown. Length 4 mm. A single specimen. Stanford University, California. Type No. 7677, U. S. National Museum.

HELOMYZIDAE.

- 111 *HELOMYZA PLUMATA* Lw. Ormsby County, Nevada.
- 75 *HELOMYZA TINETA* Wlk. Stanford University.
- 1796 *Eccoptomera simplex* Coquillett, new species.
- Yellow, the antennae reddish yellow, the arista except the base black, hairs and bristles black; bristly hairs on lower edge of cheeks in a single row, pleura without hairs except on the sternopleura, scutellum with a few short hairs on each side of the middle, hind femora simple, without clusters of hairs or bristles; wings dark gray, toward the base yellowish, spines of costa unusually long, hind crossvein very oblique, the discal cell acutely pointed at the lower outer angle. Length 5 mm. A male specimen. Ormsby county, Nevada. Type No. 6713, U. S. National Museum.

This European genus is now for the first time recorded from this country. It is closely related to *Oecothia* but lacks the bristles on the outer side of the middle tibiae.

- 745 *LERIA (Blepharoptera) PECTINATA* Lw. Stanford University.

SCIOMYZIDAE.

- 91 *SCIOMYZA HUMILIS* Lw. Stanford University.
- 100 *SCIOMYZA NANA* Fall. Stanford University.

- 1797 *SCIOMYZA OBTUSA* Fall. Ormsby County, Nevada.
 76 *TETANOCERA PICTIPES* Lw. Stanford University and also in Ormsby County, Nevada.
 36 *TETANOCERA PLUMOSA* Lw. Stanford University, and also in Ormsby County, Nevada (135).
 132 *TETANOCERA SARATOGENSIS* Fh. Ormsby County, Nevada.

SCATOMYZIDAE.

- 85 *SCATOPHAGA FURCATA* Say. Stanford University, and also in Ormsby County, Nevada.
 74 *SCATOPHAGA STERCORARIA* L. Stanford University, and also Ormsby County, Nevada.
 103 *SCATOMYZA APICATA* Thos. Stanford University.

ANTHOMYIDAE.

- 1798 *HYDROTAEA ARMIPES* Fall. Ormsby County, Nevada.
 1799 *LIMNOPHORA BOREALIS* Stein. Ormsby County, Nevada.
 1800 *LIMNOPHORA CYRTONEURINA* Stein. Stanford University, and also in Ormsby County, Nevada.
 101 *LIMNOPHORA DISCRETA* Stein. Ormsby County, Nevada.
 997 *OPHYRA LEUCOSTOMA* Wied. Stanford University.
 90 *HYLEMYIA ALCATHOE* Wlk. Stanford University.
 92 *HYLEMYIA VARIATA* Fall. Stanford University.
 65 *MYDAEA AMOEBA* Stein. Ormsby county, Nevada.
 95 *MYDAEA NITENS* Stein. Ormsby county, Nevada.
 1801 *ANTHOMYIA MICROPTERYX* Thom. Stanford University and also in Ormsby county, Nevada.
 1217 *PEGOMYIA AFFINIS* Stein. In the mountains near Claremont, California.
 1278 *PEGOMYIA CINERELLA* Fall. Ormsby county, Nevada, and also in the mountains near Claremont, California (1276).
 96 *PEGOMYIA FUSCICEPS* Zett. Stanford University. Taken also in Ormsby county, Nevada (97), and in the mountains near Claremont, California (1274).
 46 *PEGOMYIA ruficeps* Stein. Stanford University.
 1802 *Coenosia argentata* Coquillett, new species.

Black, the coxae, trochanters, base of front side of femora, more than the basal half of middle and hind femora and extreme base of each tibia, yellow, halteres whitish; head as broad as high, densely silvery-white pruinose, the occiput more bluish gray; antennae two-thirds as long as the face, white pruinose, the third joint nearly twice as long as the second, the upper edge slightly convex, the lower front corner rather blunt, arista almost bare, thickened on the basal fourth, palpi clavate. Body densely silvery-white pruinose, thorax almost devoid of bristly hairs, two pairs of

presutural dorsocentral bristles but the anterior pair very short, abdomen broadly ovate, about twice as long as broad, sparsely haired, hypopygium projecting two-thirds length of preceding segment of abdomen beyond the latter, its first segment bearing two bristles and a few hairs, its second segment with a few hairs only. Front and middle tibiae with a short bristle near middle of the posterior side, hind ones with a very short bristle near middle of inner-anterior and a long one on outer-anterior side, claws and pulvilli short. Wings hyaline, third and fourth veins outwardly nearly parallel, hind crossvein nearer to apex of fifth vein than to small crossvein, calypteres white. Length slightly over 2 mm. A male specimen. Stanford University, California. Type No. 7675, U. S. National Museum.

988 *COENOSIA CANESCENS* Stein. Stanford University.

1803 *Coensia majuscula* Coquillet, new species.

Black, the halteres, tibiae, trochanters and rather broad apices of the femora, yellowish; head higher than broad, grayish pruinose except the frontal vitta, the gray ocellar triangle prolonged half way to the antennae; the latter two-thirds as long as the face, the second joint whitish pruinose on the upper side, the third one and one-fourth times as long as the second, bluntly rounded at the apex, arista thickened on less than the basal third, pubescent; palpi slender, slightly enlarged at apex. Thorax grayish pruinose, not vittate, two pairs of presutural dorsocentral bristles and three pairs of postsutural, three sternopleurals. Abdomen about three times as long as wide, grayish pruinose and with a pair of black, elongated spots on the second and third segments, hypopygium about two-thirds as long as the preceding segment of abdomen, the first segment nearly twice as long as the second and bearing several bristles, the second bearing only bristly hairs. Front tibiae bearing only a single bristle near middle of the posterior side, middle and hind tibiae with a pair of bristles near the middle, the hind ones also with a very long preapical bristle on the outer side, pulvilli greatly elongated. Wings hyaline, the veins brown, calypteres whitish. Length 4 mm. A male specimen. Stanford University, California. Type No. 7674, U. S. National Museum.

1007 *COENOSIA VERNA* Fabr. Stanford University.

1804 *Lispa polita* Coquillet, new species.

Near *uliginosa*, but the tibiae are black, the abdomen without distinct grayish pruinose portions, etc. Black, the apex of second antennal joint, the palpi and halteres, yellow; face yellowish pruinose, the sides almost wholly covered with short bristly hairs among which are two or three much longer ones opposite the vibrissae, palpi considerably dilated apically, covered with black bristly hairs except on the basal and apical portions of the under side; body polished, the mesonotum thinly brownish pruinose, the

sides and pleura thinly grayish pruinose, an indistinct grayish pruinose dorsal vitta on middle of abdomen of female; three pairs of postsutural dorsocentral bristles, no acrostichals; first tarsal joint at least as long as the following two taken together, pulvilli short, yellowish white, front tibiae each bearing at two-thirds of its length a bristle on the outer-anterior and another on the inner-posterior side, middle femora bristly on nearly the entire length of the under-anterior side, the tibiae with two bristles like the front ones; hind femora bearing four bristles on the under-anterior side, the tibiae with one below middle of the inner-anterior side and three on the outer anterior side; wings hyaline, third and fourth veins toward their apices parallel, calypteres yellowish white. Length 4 to 6 mm. One male and four females. Ormsby county, Nevada. Type No. 6712, U. S. National Museum.

109 *SCHOENOMYZA CHRYSOSTOMA* Lw. Stanford University.

99 *SCHOENOMYZA DORSALIS* Lw. Ormsby County, Nevada.

1805 *GYMNOPHANIA MONTANA* Coq. Ormsby County, Nevada. "This species has no hypopleural bristles, and if the type species of *Gymnophania* is congeneric with *montana*, the authors of the genus. Brauer and Bergenstamm, were in error in placing it in the Tachinidae" (Coquillett).

1806 *Phaonia fimbriata* Coquillett, new species.

Near *septentrionalis* but the spines of the front tibiae of the male are four in number and are arranged in a single row. Black, the halteres brown; frontal vitta narrower than the lowest ocellus. eyes rather densely pilose, longest hairs of arista slightly longer than its greatest diameter; body slender, mesonotum and scutellum not distinctly gray pruinose except along the sides of the former, four pairs of postsutural dorsocentral bristles, sternopleurals 1 and 1; abdomen gray pruinose, a median blackish vitta expanded at the hind end of the second and third segments, hairs of dorsum rather long and chiefly erect, venter simple, hypopygium polished; front tibiae bearing a row of four spines on the apical third of the posterior side; middle femora on the under side bearing short hairs only, their tibiae with only about three very short bristles, situated on the posterior side; hind femora with short hairs on the under side and with bristles on the apical third of the anterior under side, hind tibiae ciliate along the anterior inner side with long, slender bristles, along the outer side with bristles of an unequal length, and along the posterior-inner side except on the basal third with rather long bristly hairs; wings hyaline, slightly brownish at the base, costa not spined, auxiliary spine minute, fourth vein toward its apex diverging from the third; calypteres yellowish white. Length 5 mm. Two males. Ormsby County, Nevada. Type No. 7673, U. S. National Museum.

125 *PHAONIA NIGRIPENNIS* Wlk. Very common in Ormsby County, Nevada.

- 1807 *PHAONIA PUNCTATA* Stein. Ormsby County, Nevada.
 64 *PHAONIA RUFITIBIA* Stein. Ormsby County, Nevada.
 1808 *PHAONIA VARIPES* Coq. Stanford University.

OESTRIDAE.

- 112 *CUTEREBRA BUCCATA* Fab. Ormsby County, Nevada. During some of the very hot days the walls of the tents were tied up and these magnificent flies, buzzing slowly over the surface of the ground, would pass beneath them, where they were promptly captured by my wife as she sat at the plant tables.

SARCOPHAGIDAE.

- 748 *HELICOBIA HELICIS* Twn. Stanford University and also in Ormsby County, Nevada.
 1809 *HELICOBIA QUADRISETOSA* Coq. Stanford University.

MUSCIDAE.

- 1810 *STOMOXYS CALCITRANS* L. Stanford University.
 1282 *MUSCA DOMESTICA* L. Abundant everywhere.
 1811 *POLLENIA RUDIS* Fabr. Stanford University.
 72 *CALLIPHORA COLORADENSIS* Hough. Stanford University.
 746 *CALLIPHORA LATIFRONS* Hough. Stanford University.
 33 *CHRYSOMYIA MACELLARIA* Fabr. Stanford University.
 980 *LUCILIA CAESAR* L. Stanford University.
 976 *LUCILIA SERICATA* Meig. Stanford University.
 978 *PHORMIA REGINA* Meig. Stanford University and also in Ormsby County, Nevada.
 996 *MORELLIA MICANS* Macq. Stanford University.
 977 *PSEUDOPYRELLA CORNICINA* Fabr. Stanford University, and also in Ormsby county, Nevada (1265).
 999 *MYOSPILA MEDITABUNDA* Fabr. Common in all three regions.

TACHINIDAE and DEXIDAE.

- 1812 *Admontia setigera* Coquillett, new species.

Black, the second joint of antennae, cheeks, palpi, halteres and trochanters, yellowish; vertex slightly narrower than either eye, uppermost frontal bristles almost erect, reclinate, frontal bristles descending nearly to apex of second joint of antennae, sides of face at narrowest point one-fourth as wide as the facial depression, bearing a row of bristles extending slightly below end of eyes as if in continuation of the frontal row, otherwise bare except on the upper portion, vibrissae scarcely above front edge of the oral margin, three or four bristles above each; antennae about six-sevenths as long as the face, the third joint slightly over three times as long as the second, arista thickened on the basal two-fifths, cheeks one-third as wide as the eye-height. Body thinly whitish pruinose, mesonotum marked with four black vittae, three pairs of postsutural dorsocentral bristles, three sternopleurals on a curved row,

abdomen bearing only marginal bristles on the second and third segments and discal and marginal ones on the fourth, venter devoid of spines. Middle tibiae bearing a single bristle on the front side near the middle, front-tarsi not dilated. Wings hyaline, third vein bristled more than half way to the small cross vein. Calypteres white. Length 6 mm. A female specimen. Stanford University, California. Type No. 7671, U. S. National Museum.

1813 *BIOMYA GEORGIAE* Br. & Berg. Ormsby county, Nevada.

1814 *Biomya mutabilis* Coquillett, new species.

Black, the frontal lunule, first joint of antennae, apex of second and base of the third joint, also the palpi, yellowish; vertex about as wide as either eye, two pairs of orbital bristles, frontals descending nearly to apex of second joint of antennae, sides of face at narrowest part slightly over one-third as wide as the facial depression, bare on the lower half, the remainder with short sparse hairs, like the front; vibrissae situated slightly more than length of second antennal joint above anterior edge of oral margin, four or five bristles above each; antennae two-thirds as long as the face, the third joint slightly over twice as long as the second, arista bare, thickened on the basal third, cheeks slightly over one-third as wide as the eye-height. Thorax gray pruinose, mesonotum marked with four black vittae, four pairs of postsutural dorsocentral bristles, three sternopleurals. Abdomen gray pruinose and with darker reflecting spots, the first three segments bearing only marginal bristles. Middle tibiae bearing two stout bristles on the front side near the middle, hind tibiae not fringed. Wings hyaline, third vein bearing three bristles near the base. Calypteres whitish. Length, 8.5 mm. A female specimen. Ormsby county, Nevada. Type No. 7672, U. S. National Museum.

1815 *CELATORIA DIABROTICAE* Shimer. Stanford University.

31 *CISTOGASTER IMMACULATA* Mcq. Stanford University.

63 *CRYPTOMEIGENIA THEUTIS* Wlk. Ormsby county, Nevada.

122 *ECHINOMYIA ALGENS* Wied. Ormsby county, Nevada.

123 *ECHINOMYIA DAKOTENSIS* Twn. Ormsby county, Nevada.

1816 *EPIGEIMYIA SETIGERA* Coq. Stanford University.

1817 *EXORISTA NIGRIPALPIS* Twn. Ormsby county, Nevada.

75 *EXORISTA PYSTE* Wlk. Ormsby county, Nevada.

1818 *EXORISTA TRISETOSA* Coq. Ormsby county, Nevada.

76 *FRONTINIA FRENCHII* Will. Ormsby county, Nevada.

1819 *GONIA CAPITATA* DeG. Ormsby county, Nevada, and also at Stanford University.

26 *GRAPHOMYIA MACULATA* Scop. Stanford University.

81 *GYMNOSOMA FULIGINOSA* Desv. Ormsby county, Nevada, and also at Stanford University (32).

1820 *HETEROPTERNIA NASONI* Coq. Ormsby county, Nevada.

1821 *HILARELLA ARISTALIS* Coq. Stanford University.

1822 *HILARELLA SIPHONINA* Zett. Ormsby county, Nevada.

- 43 *HYALOMYODES TRIANGULIFERA* Lw. Stanford University.
 1004 *HYPOSTENA TORTRICIS* Coq. Stanford University.
 1823 *LEUCOSTOMA ATRA* Twn. Stanford University, and also in Ormsby county, Nevada.
 1824 *LEUCOSTOMA NEOMEXICANA* Twn. Stanford University.
 1825 *METACHAETA HELYMUS* Wlk. Ormsby county, Nevada.
 1826 *METOPHA LEUCOCEPHALA* Rossi. Ormsby county, Nevada.
 115 *MYIOPHASIA AENEAE* Wied. Ormsby county, Nevada.
 30 *MYOCERA TIBIALIS* Desv. Stanford University and also in Ormsby county, Nevada.
 127 *OCYPTERA CAROLINAE* Desv. Ormsby county, Nevada and also at Stanford University.
 48 *PACHYOPHTHALMUS FLORIDENSIS* Twn. Stanford University, and also in Ormsby county, Nevada.
 45 *PARADIDYMA SINGULARIS* Twn. Stanford University, and also in Ormsby county, Nevada.
 1827 *PELETERIA ROBUSTA* Wied. Ormsby county, Nevada.
 27 *PHORANTHA OCCIDENTALIS* Wlk. In great abundance at Stanford University, and also in Ormsby county, Nevada (66).
 559 *PHORICHAETA SEQUAX* Will. Stanford University, and also in Ormsby county, Nevada.
 1828 *PHOROCERA FACIALIS* Coq. Ormsby county, Nevada.
 74 *PHOROCERA SAUNDERSII* Will. Ormsby county, Nevada.
 1829 *PLAGIOPSPHERYSA PARVIPALPIS* v. d. W. Ormsby county, Nevada.
 44 *PLUSIA BREVIROSTRIS* Coq. Stanford University.
 1005 *SENOTAINIA DECISA* Twn. Stanford University.
 1830 *SENOTAINIA RUBRIVENTRIS* Macq. Ormsby county, Nevada.
 47 *SENOTAINIA TRILINEATA* v. d. W. Common in all three regions.
 1006 *SIPHONA PLUSIAE* Coq. Stanford University.
 1277 *SIPHOSTURMIA ROSTRATA* Coq. Claremont, California.
 34 *SPALLANZANIA HESPERIDARUM* Will. Stanford University.
 740 *STURMIA OCCIDENTALIS* Coq. Stanford University.
 739 *TACHINA MELLA* Wlk. Stanford University.
 1831 *TACHINA ROBUSTA* Twn. Ormsby county, Nevada.
 77 *TACHINA RUSTICA* Fall. Ormsby county, Nevada.
 1832 *TRICHOPODA PENNIPES* Fabr. Stanford University.
 130 *WAHIBERGIA BREVIPENNIS* Lw. Common in Ormsby county, Nevada.
 87 *XANTHOMELANA ARCUATA* Say. Occurs sparingly in all three regions.

ADDENDA.

- 92 *METATRICHIA BULBOSUS* OS. Ormsby county, Nevada.
 101 *PLATYPALPUS AEQUALIS* Lw. Stanford University.
 1630 *Scleropogon jubatus* Coquillett, new species.

Black, the halteres, apices of first two pairs of femora, broad bases of their tibiae and of the joints of their tarsi, yellowish; hairs and bristles of face, antennae, front and upper part of occiput, black; remaining ones of head and those on the palpi dull whitish; style of antennae nearly one-half as long as the third antennal joint, hairs and bristles of body and legs whitish, those on the scutellum and along middle of mesonotum black, the latter unusually long and nearly erect; hairs on basal half of abdomen also unusually long; thorax grayish pruinose, mesonotum marked with four blackish vittae, abdomen somewhat polished; wings grayish brown, the base nearly to base of discal cell except in the costal and marginal cells, white, first and fourth posterior cells open; mesopleura and hypopleura bare. Length, 22 mm. A male specimen. Claremont, Los Angeles county, California. Type No. 7732, U. S. National Museum.

1623 **Leptomydas hirtus** Coquillett, new species.

Black, the hind margins of the abdominal segments except two spots on the second, genitalia, venter of abdomen, trochanters, femora, tibiae and tarsi, yellow; scutellum reddish yellow, halteres yellowish brown; occiput, face and sides of front densely beset with bright yellow hairs; sides of mesonotum densely covered with similar hairs which on the front end extend inward nearly to the middle and then backward almost to a patch of these hairs in front of the scutellum; a patch of similar hairs above the front coxae and a larger one above the hind coxae, also one in front of the halteres; sides of first abdominal segment, basal half of the second, apical two-thirds of the three following, nearly the whole of the sixth and the whole of the seventh densely beset with hairs of the same bright yellow color; wings hyaline, base of second submarginal cell devoid of a stump of a vein, first posterior cell closed; lamellae of antennae unusually broad, obovate, less than twice as long as wide, proboscis nearly reaches apex of the third antennal joint. Length 11 mm. A male specimen. Claremont, Los Angeles county, California. Type No. 7731, U. S. N. M.

— **Leptomydas concinnus** Coquillett, new species.

A second species which also occurs in Los Angeles county, Cal. is remarkably like *hirtus* but the lamellae of the antennae are chiefly orange-yellow and over twice as long as wide, and the scutellum is black. The abdomen of the female has yellow hairs on the first two segments only.

TWO NEW SIPHONAPTERA.

BY C. F. BAKER.

— **Anomiopsyllus Californicus** n. sp.

The second species of this very interesting genus has been found at Claremont, Los Angeles County, California, on *Spilogale phenax*. It agrees with *nudatus* in all generic

characters; in addition, the antennal groove is apparently closed. The new species differs from *nudatus* as follows:

Female: The first joint of hind tarsi has three groups of spines on the anterior margin. The long spine on the apex of second joint of hind tarsi extends only to the middle of the last joint. The lengths of the hind tarsal joints are in the proportion 22-11-8-5-11.

Each ventral segment bears two bristles on either side, a large and a small one, the larger one above and behind the smaller. An oblique row of three bristles occurs beneath the pygidium; the upper one is the smallest, the lowest much the largest. Length 2 mm.

— ***Ceratophyllus acutus* n. sp.**

Professor Kellogg has handed to me some specimens collected at Stanford University by a student of his, on the common *Spermophilus* of that region. It is closely related to the other spermophile fleas, coming nearest to *idahoensis* and *arizonensis*, from both of which it is well separated by the very different form of male claspers and by numerous minor details.

Female: Differing from the female of *idahoensis* as follows: Gena below the eye subacutely pointed posteriorly. Hind margin of antennal groove with several stout hairs below; just back of the margin is a long bristle. The prothorax has a ctenidium of about eighteen stout spines. The metanotum and first three tergites each have a small stout tooth on either side of hind margin. But two large antepygidial bristles occur on either side. Most of the sternites have single rows of about twelve bristles each; on the seventh sternite there is a second row of small bristles. Beneath the pygidium on either side are three bristles. The eighth segment bears numerous irregularly placed stout bristles. Style short and thick, somewhat narrowed to the tip where there is one stout bristle and a smaller one beneath. Hind femora with a longitudinal row of four or five minute bristles on the side. The spines on the under side of fifth tarsal joint stand in uniform rows on either margin. The lengths of the hind tarsal joints are in the proportion 32-19-9-5-13. Length 3.5 mm.

Male: Hind margin of antennal groove with only two small bristles. Sternites each with a single row of six stout bristles. Lateral portion of ninth tergite with the apical lobe broadly rounded, its margin bearing a few weak hairs and two long bristles over the insertion of the claspers. The upper claspers are very long and slender, somewhat enlarged toward the base, the upper two-thirds nearly parallel sided and somewhat curved dorsad. The tips of the claspers are subacutely pointed and the hind margin bears three or four long hairs. Length 3 mm.

INVERTEBRATA PACIFICA

EDITED BY C. F. BAKER

HYMENOPTERA

DESCRIPTIONS OF SOME NEW HYMENOPTERA FROM CALIFORNIA AND NEVADA

J. J. KIEFEER

The following new species of Hymenoptera were collected in California and Nevada by Prof. C. F. Baker,

I. EVANIIDAE.

2294 *Gasteruption Nevadense* n. sp.

Black; head opaque or very finely shagreened, posteriorly a little narrowed; cheeks shorter than the second joint of the antennae; eyes glabrous, separated from the simple hind margin of the head by a space equalling half their length. Antennae brown-red in the apical half; in the female the second joint scarcely longer than thick, the third a little shorter than the fourth, nearly twice as long as the second; in the male the third joint one third longer than the second; the fourth as long as the second and third united. Tegulae brown-red; neck short; pronotum with a very small tooth on each side; mesonotum, scutellum, pro- and meso-pleurae opaque and shagreened, the two divergent lines distinct; mesonotum coarsely shagreened behind the crenulated line; metanotum and meta-pleurae coriaceous, not reticulated. Wings nearly hyaline. All the tarsi, and on the front and middle legs the tibiae and bases of femora, reddish brown; hind tibiae dusky brown, basally whitish, hind coxae coriaceous, apically very finely and transversely striated. Abdomen red; the first segment, basal half of the second, a dorsal spot on the middle of segments 3-5, and the segments 6-7 entirely black; ovipositor longer than the first segment of the abdomen, but shorter than the first and second united; sheath entirely black; segments 3 and 4 of the male with a transverse black band. Length of male and female, 7.5-11 mm. Ormsby county, Nevada, July.

472 *Gasteruption pyrrhosternum* n. sp.

Ferruginous and opaque; head, except the mandibles, black; front, vertex, and occiput very finely transversely striated; face with white pubescence; cheeks very short; eyes glabrous, separated from the hind margin of the head by a space equalling half their length; head poste-

riorly truncate-conical, hind margin with a fine ridge. Antennae brown-red, joints 2-4 nearly black; second joint as long as thick; the third one-third longer than the second; the fourth equalling the second and third united. Mesonotum and scutellum black; neck very short, prothorax with a rather stout tooth on each side above; mesonotum densely and finely transversely rugose and punctulate, reticulated behind the crenulated cross-line, especially in the middle; the two divergent lines distinct; scutellum coriaceous; propleurae rugose; mesopleurae coriaceous above, reticulated behind as are also the metapleurae and metanotum. Wings hyaline, hind wings without veins. Hind coxae transversely striated; hind tibiae brown-red, basally yellowish-white. Abdomen shining; a small dorsal spot on segments 2 and 3, and the following segments dorsally brown-black; ovipositor as long as the body, sheath black, the extreme apex white. Length of the female, 10 mm. Stanford University, Santa Clara county, California.

471 *Gasteruption rubrofasciatum* n. sp.

Black; head opaque, finely shagreened; vertex and occiput very finely transversely striated; cheeks shorter than the second joint of antennae; eyes glabrous, twice as long as their distance from the hind margin of the head. Antennae brown-red apically; second joint scarcely shorter than the third; the fourth one-third longer than the second and third united. Tegulae ferrugineous; neck short; pronotum with a short tooth on each side; mesonotum finely transversely rugose and punctulate, reticulated behind the crenulated cross-line, the divergent lines distinct; propleurae and mesopleurae rugose basally; scutellum faintly transversely rugose; metanotum and metapleurae reticulated. Wings hyaline. Front coxae, front and middle legs, and bases of the hind femora, red; hind tibiae and hind tarsi dusky brown, the hind tibiae basally white; hind coxae transversely striate. Segments 2-6 of the abdomen apically each with a transverse red band. Length of the male, 12 mm. Stanford University, Santa Clara county, California.

II. CYNIPIDAE.

3141 *Callirhytis maculipennis* n. sp.

Black, opaque and pubescent. Head rugose, enlarged behind the eyes; front coriaceous, temples longitudinally striated and finely punctured, nearly smooth and shining close behind the eyes. Antennae brownish-red, the last joints more or less fuscous, 14-jointed, nearly glabrous; second joint hardly longer than thick; the third at least thrice as long as thick, the following joints gradually decreasing in size; joints 9-13 nearly equal, one third longer than thick; the last a little longer than the penultimate. Thorax coarsely rugose; mesonotum irregularly rugose posteriorly between the parapsidal furrows, anteriorly and laterally more or less transversely rugulose; parapsidal furrows complete; the four glabrous lines of the mesonotum are ridged; mesopleura shagreened and smooth; scutellum hardly longer than wide, rugose, with two triangular foveae at

the base and a longitudinal middle furrow in the anterior two-thirds. Metanotum glabrous, shagreened, with three longitudinal carinae, the lateral ones curved outwards. Wings hyaline, fringed, with a fuscous spot at the base of the radial cell; first abscissa of the radius angulate. Legs brownish red, hind femora and middle part of the hind tibiae fuscous; claws simple. Abdomen smooth, shining, laterally pubescent only at the base of the second segment, longer than the head and the thorax united; second segment one-fourth shorter than the whole abdomen, finely punctulate apically, laterally very sloping; the two following segments also punctulate. Length of female: 3.5-4 mm.

Gall.—A bud gall on *Quercus agrifolia*, globular, the diameter 22 mm. or more, whitish, smooth and glabrous, apically with a very small wart; the inner substance is also whitish, somewhat spongiöse, and contains below the middle several brownish cells which are 4 mm. high and 2 mm. wide.

This species is allied to the genus *Amphibolips*, from which it is excluded by the tarsal claws being simple.

3145 *Callirhytis eriophora* n. sp.

Brownish red, opaque, scarcely pubescent, and finely shagreened. Head enlarged behind the eyes. Antennae 14-jointed the second joint longer than thick; the third fully thrice as long as thick, scarcely longer than the fourth; the following joints gradually shorter and thicker; the penultimate, one-third longer than thick, shorter than last. Mesonotum nearly glabrous, with four dusky longitudinal stripes, the lateral of which are abbreviated anteriorly, the two others shortened posteriorly; parapsidal furrows not complete, anteriorly obliterated. Scutellum rugose, nearly glabrous, basally with two divergent foveae. Metanotum black-brown, with two parallel carinae. Wings hyaline, fringed, the veins brown, the first abscissa of radius angulated. Legs faint yellow; claws simple. Abdomen dark red-brown, above nearly black; the second segment occupying nearly the whole abdomen, very shining, glabrous, posteriorly microscopically punctulate; ventral-spine eight times as long as wide. Length of the female 3-3.2 mm.

Gall.—A bud gall on *Quercus Wislizenii*; the gall is rounded, 10 mm. in diameter, the outer portion a yellowish wool-like substance, the inner a globular, ligneous, thin-shelled and monothalamous cell, 4 mm. or more in diameter.

3143 *Callirhytis Clarimontis* n. sp.

Brownish yellow, finely shagreened and scarcely shining. Head enlarged behind the eyes. Antennae black-brown apically, 14-jointed; the third joint nearly five times as long as thick, one half longer than the fourth; the following joints gradually decreasing in length, the penultimate one third longer than thick, the last more than twice as long as thick. Mesonotum nearly glabrous, with four dusky longitudinal stripes, the two lateral ones abbreviated anteriorly; the parapsidal furrows complete. Scutellum rugose, nearly glabrous, with two divergent foveae at the base.

Metanotum black-brown, with two parallel carinae. Wings hyaline, fringed, the veins dusky, the first abscissa of the radius angulated. Legs and coxae faint yellow, claws simple. Abdomen glabrous, highly polished, not punctulate, dorsally more or less black-brown, the second segment surpassing somewhat the middle, laterally very sloping; ventral-spine four to five times as long as wide. Length of the female 3.5-4 mm.

Gall:—The gall of this species was found on *Quercus agrifolia*; it is a bud gall 8 mm. in diameter and more, globular, opaque, yellowish, with some sparse brown spots, glabrous, apically with short and sparse hairs and a small wart; the inner substance is brown, spongiouse, and encloses a globular, faint yellow, thick-shelled, monothalamous shell 5 mm. in diameter and more; wall of the cell 1.6 mm. thick.

3144 *Callirhytis Bakeri* n. sp.

Brown-red, shagreened and pubescent. Head enlarged behind the eyes. Antennae sometimes black-brown apically, 14-jointed; the second joint longer than thick; the third joint four times as long as thick, one third longer than the fourth; joints 4-6 subequal, the fourth scarcely longer than the fifth, the eight apical joints gradually decreasing in length, the penultimate one-half longer than thick, a little shorter than the last, or sometimes only half the length of the last. Thorax scarcely shining; parapsidal furrows obliterated anteriorly; scutellum rugose, the two basal foveae black, deep, separated by a small carina and oblique and divergent; postscutellum and metanotum rugose, the two carinae parallel. Wings hyaline, fringed, veins brown, first abscissa of the radius angulated. Legs and coxae faint yellow, claws simple. Abdomen black-brown, highly polished and shining, glabrous, longer than the head and the thorax united, the second segment with a pubescent spot on either side at base; these spots occupy the basal three-fourths, the segments are microscopically punctured apically; ventral-spine four times as long as wide. Length of the female 3.8-4 mm.

Gall.—A bud gall on *Quercus crassipocula*; gall oval, about 13 mm. high and 11 mm. thick, smooth, glabrous, ligneous, apically with a thin, longitudinally striated, thick and more or less bent point which is about 8 mm. high and 1.5 mm. thick; proximally with some bud-scales lying close to the base of the gall; the inner substance subspongiouse.

3142 *Callirhytis polythyra* n. sp.

Brown-red, coriaceous and pubescent. Head enlarged behind the eyes. Antennae black-brown, 5-jointed and pubescent; the third joint nearly one-half longer than the fourth, which is fully thrice as long as wide, and longer than the fifth; joints 5-7 gradually becoming shorter, the eight apical joints equal, scarcely longer than thick and not enlarging, the last sometimes a little longer than the penultimate. Thorax almost opaque, not distinctly punctured; parapsidal furrows obliterated anteriorly; the two usual foveae at the base are represented by a large arcuated transverse furrow; metathorax black, the two carinae of the metanotum parallel. Wings hyaline, fringed, veins brown; the first

abscissa of radius angulated. Tibiae black or black-brown, the two front tibiae sometimes fainter colored; tarsi more or less dusky; claws simple. Abdomen highly shining, glabrous, longer than the head and the thorax united; the second segment dorsally black or black-brown on the basal two-thirds, on each side with a pubescent spot; the second segment is not punctate and occupies a little more than the half of the entire abdomen. Ventral-spine four to five times as long as wide. Length of the female 3.5-4 mm.

Gall.—This species forms on *Quercus agrifolia* and *Q. crassipocula* rounded or elongated polythalamous twig swellings about 20-30 mm. in length and 15-25 mm. in breadth, covered with the normal bark and ligneous within; the numerous cells are elongate, 2-2.5 mm. in breadth, thin shelled, close together, and nearer to the bark than to the inner pith of the twig.

1535 *Synergus flavus* n. sp.

Pale yellow or reddish yellow; head distinctly broader than the thorax, without carinae; front and vertex smooth, face and cheeks paler yellow. Antennae of the male 15-jointed, the two to three last joints more dusky; second joint longer than thick; the third scarcely longer than the fourth, faintly emargined outwardly; the fourth twice as long as thick; the following ones gradually becoming shorter; the penultimate joint is a little longer than thick, shorter than the last and all are very slender; antennae of the female 14-jointed, filiform and slender; the third joint fully thrice as long as thick, the following gradually decreasing in size, the penultimate only one-third longer than thick, shorter than the last. Mesonotum finely coriaceous; mesopleurae very finely longitudinally striated; scutellum brownish red, rugose, the usual foveae small, not very distinct, separated by a small carina. Metanotum brown or black-brown, the carinae parallel. Wings hyaline, veins brownish. Tarsal claws simple. Petiole of abdomen black, coarsely longitudinally striated; the second segment reaching to the apex of the abdomen, smooth and not punctured.

Bred from galls of *Callirhytis maculipennis*; the guests live in the spongy substance of the gall, outside of the cells and do not hinder the development of the gall makers.

NEW HYMENOPTERA MOSTLY FROM NICARAGUA

P. CAMERON

The Hymenoptera of Nicaragua and the adjacent States are practically unknown. The following are the first of a lot of new species and genera collected by Prof. C. F. Baker.

. ICHNEUMONIDAE.

1462 *Pristomeridia? microdonta* sp. nov.

Rufo-testaceous; the face, clypeus, inner orbits, mandibles except at apex, and palpi yellow; the occiput with a large black mark incised above in the center; the sides of mesonotum, metanotum and the basal three segments of abdomen above, black, the other segments of abdomen above pale yellow. Legs rufo-testaceous, the coxae and trochanters yellowish, the hind tibiae broadly black at the base and apex; the hind tarsi black, testaceous at the base. Wings clear hyaline, the nervures and stigma black, as are also the apex of the prosternum and the whole of the mesosternum. Antennae black, the scape testaceous. Female. Length 4 mm; ovipositor 2 mm. Chinandega, Nicaragua.

Smooth and shining; the metanotum minutely punctured, thickly covered with white pubescence; the areae are all clearly defined; the apical slope in part rufous. Face distinctly raised in the center, clypeus roundly convex, distinctly separated from it; on either side of it above is a large fovea, its apex broadly rounded; labrum projecting. Femoral tooth minute, indistinct.

This may not be a *Pristomeridia*, the femoral tooth being small and indistinct, not "strong", but it possesses the other characters of the genus and tribe.

BRACONIDAE

1469 *Bracon Managuae* sp. nov.

Luteous, the abdomen and legs paler, the head with the front, vertex, occiput, upper half of outer orbits, flagellum of antennae and hind tarsi, black; wings hyaline, highly iridescent, the nervures and stigma fuscous. Length of male 2.5 mm. Managua, Nicaragua.

Head smooth, shining, the face aciculated. Palpi pale yellow. Median segment with some longitudinal striae on the basal half. Second abdominal segment strongly aciculated, without a basal area, the first longitudinally striated. Third abscissa of radius longer than the basal two united.

1467 *Bracon Chinandegaensis* sp. nov.

Black, the face below the antennae, the inner orbits narrowly, the upper more broadly, the malar space, mandibles, the apex of abdomen and

the ventral surface, the second and following three segments of the abdomen broadly on the sides, rufo-testaceous; the legs testaceous, the tibiae and tarsi black. Wings hyaline, suffused with fuscous, clearer at the apex, the stigma testaceous, the nervures darker. Female. Length 2 mm., terebra 1 mm. Chinandega, Nicaragua.

Face aciculated; the front hollowed below, with a smooth keel in the center. Mesonotum opaque, thickly covered with white pubescence. Metanotum aciculated, as are also the second and third abdominal segments. The testaceous lateral stripe on the second segment is widest at the base, the black central mark being thus triangular. The first and second abscissae of the radius are equal in length, the third is almost twice their length; the first cubital cellule is widened at the apex through the cubitus being bent obliquely downwards to where the recurrent nervure is received.

1458 ***Bracon Nicaraguaensis*** sp. nov.

Black, the head except the front and vertex, broadly in the center, a triangular large mark on the apex of pronotum, the sides and base of mesonotum broadly, scutellum, greater part of metanotum, the mesopleurae except at the base, the metapleurae and the breast, black; the abdominal segments infuscated on the back, closely and minutely but distinctly punctured; the second segment with a fine keel down the center, not dilated at the base, the suturiform articulation curved in the middle, the lateral part straight, directed obliquely blackwards. Wings hyaline, highly iridescent, the stigma and nervures dark fuscous, the apical abscissa of the radius slightly longer than the basal two united; the recurrent nervure received almost the length of the second transverse cubital in front of the first. Female. Length 2 mm., terebra about 1 mm. Chinandega, Nicaragua.

Antennal scape rufous. Head and thorax smooth and shining, the face aciculated. Mesopleurae with an obscure row of punctures in the center. Middle lobe of mesonotum raised, gradually narrowed to a point at the apex, where the base of the scutellum is clearly raised above it. Metanotum strongly aciculated. First abdominal segment deeply depressed on the basal half, the raised apical part aciculated, the other segments closely finely longitudinally striated. Apex of metanotum rounded, more strongly aciculated—almost punctured—than the base, and with a short smooth keel in the center of the apex.

1463 ***Bracon Bakeri*** sp. nov.

Rufo-testaceous, antennae, ocellar region, a longish large mark on the lateral lobes of the mesonotum, an irregular, much smaller mark on the base of the central, the lateral lines continued on to the scutellar region, two large marks converging towards the apex, the greater part of the mesosternum, the mark incised in the middle at the apex, and the backs of the third and following abdominal segments, black. Legs rufo-testaceous, the apical half of the hinder tibiae and the hind tarsi black. Wings hyaline, somewhat infuscated at the base, the nervures and stigma

black. Two basal abscissae of radius together nearly as long as the third; recurrent nervure received at nearly the length of first abscissa of radius from the first transverse cubital. Length nearly 3 mm., terebra 1 mm. Chinandega, Nicaragua.

Head smooth and shining; a large distinct fovea on the sides of the clypeus above. Mesonotum depressed at the apex laterally. Scutellum roundly convex; the furrow at its base crenulated. Metanotum with a shallow furrow in the middle. Abdomen smooth and shining; the area on the base of the second segment about twice longer than broad, its base obliquely narrowed, becoming gradually slightly narrowed from the widened part to the apex which does not reach to the suturiform articulation and has a depression on either side.

1456 *Bracon Caroli* sp. nov.

Black, a large squarish mark in the centre of the apical half of the mesonotum, scutellum, mesopleurae, mesosternum, the two basal segments of the abdomen and the sides of the third segment, rufo-testaceous; legs testaceous, the hind tibiae from near the middle and their tarsi except the two basal joints at their bases, black. Wings hyaline, highly iridescent, the stigma and nervures dark fuscous. Male. Length 2 mm. Champerico, Guatemala.

Abdomen smooth and shining; the second segment with a keel in the centre, dilated at the base; suturiform articulation straight, narrow, smooth. Two basal abscissae of the radius as long, united, as the third, the first as long as the second transverse cubital nervure, which is faint; recurrent nervure received near the apex of the first cubital cell.

1455 *Bracon longicaudis* sp. nov.

Rufo-testaceous, the antennae black, the scape testaceous below; wings hyaline, highly iridescent, the nervures and stigma fuscous; the first and second abscissae of radius are together slightly longer than the third; second abdominal segment aciculated, a keel down the centre. Female. Length nearly 2 mm. terebra 2 mm. Champerico, Guatemala.

Smooth and shining, antennae longer than the body, 21-jointed, the joints elongated, fuscous below, recurrent nervure received close to the transverse cubital; second transverse cubital faint. The keel on the second abdominal segment is indistinct and is not dilated at the base:

1460 *Forsteria?* *ruficollis* sp. nov.

Black, the prothorax, mesonotum, and scutellum rufous; the metanotum and base of mesopleurae piceous; antennal scape testaceous below; the base of flagellum fuscous; legs rufo-testaceous, the hind tibiae and tarsi fuscous; the apex of third abdominal segment pale testaceous; wings clear hyaline, the nervures fuscous, the stigma black. Female. Length 3 mm. terebra 2 mm. San Marcos, Nicaragua.

Head smooth and shining, thickly covered with long white pubescence; face closely distinctly punctured, less strongly so in the centre; clypeus rufous, punctured above; mandibles rufo-testaceous, broadly black at the apex. Thorax smooth, covered with white pubescence; the

middle lobe of mesonotum clearly separated, the parapsidal furrows deep and wide with some keels; in the centre is a fine longitudinal keel; the apex is irregularly striated. Scutellum with a fine keel down the center of the base, being continued from a stouter keel on the basal depression. Metanotum with a central area obliquely narrowed at the base and reaching to the apex; on either side of this, at the base, is an area bounded in front by a curved rounded keel; from the outer apical edge of this a keel runs down the sides to the apex. Metapleurae rugose, thickly covered with white pubescence. There is a keel roundly dilated in the middle, on the sides of the first abdominal segment and extended in the middle to the apex; the part enclosed by them is smooth and shining, the sides at the apex are strongly closely striated; the second segment is finely closely striated, except on the apical half in the centre. There is a large depression on the lower half of the base of the mesopleurae which bears stout keels; on the apex, in the centre, is a large deep fovea, pointed at the base. Antennae thickly covered with a microscopic pile. The head is fully wider than the thorax; the second abdominal segment is slightly but distinctly longer than the third. If it were not for the latter character I should have placed the species in *Sigalphus*.

1458 *Chelonus immaculatus* sp. nov.

Black, the antennal scape, tegulae and legs white, tinged with testaceous, the apex of the hind tibiae and of the metatarsus, black. Wings hyaline, the stigma and nervures black. Female. Length 3.5 mm. San Marcos, Nicaragua.

Head closely rugose, opaque, the face wrinkled; the clypeus clearly separated, more finely punctured than the face; mandibles rufo-testaceous. Central part of mesonotum closely, finely reticulated, the apical part coarsely reticulated, the furrows bounding it with stout transverse keels. Scutellum finely rugose, the transverse depression at its base deep, wide and with four keels.

1159 *Chelonus centralis* sp. nov.

Black, the antennal scape, underside of flagellum, four anterior legs, base of hind tibiae to shortly beyond the middle, the middle femora broadly above, black; the hind tarsi white; wings hyaline to the stigma, smoky beyond. Female. Length 2.5 mm. San Marcos, Nicaragua.

Face and clypeus finely rugose, thickly covered with long white pubescence; the front and vertex coarsely rugose. Mesonotum strongly reticulate. Scutellum closely rugose, almost reticulated; at its base are three areas. Metanotum coarsely irregularly rugose, the apical slope with some longitudinal keels, the two central uniting before reaching the apex; the sides near the top project into teeth. Abdomen closely reticulated, more closely at the base than at the apex. Pleurae closely, strongly reticulated.

1461 *Phaneratoma? nigroscutis* sp. nov.

Rufo-testaceous, the scutellum, the apical half of the second and the whole of the third abdominal segments, black. Legs testaceous; the hind

tibiae to shortly beyond the middle whitish, the rest of it and the hind tarsi fuscous. The antennae from the sixth joint fuscous, darker towards the apex. Wings hyaline, the nervures and stigma fuscous. Female. Length 4 mm. Chinandega, Nicaragua.

Head and thorax shagreened. Parapsidal furrows distinct on the basal half of mesonotum. Metanotum areolated. Basal two segments of abdomen clearly longitudinally striated, the third closely finely rugose; on the base of the second is a clearly defined area slightly longer than wide, rounded and slightly narrowed at the apex and pallid yellow in colour, the apex of the third segment margined and broadly rounded, the outer edges projecting.

1452 *Microdus trochanteratus* sp. nov.

Ferruginous, the antennae, a broad line on the fore femora behind, the four posterior trochanters and apices of the four posterior tibiae and the hind tarsi, black. Wings fuscous, the nervures black. Female Length 6 mm., terebra 4 mm. San Marcos, Nicaragua.

Antennae densely covered with a black microscopic pile. A stout keel occurs in the center of the scutellar depression; the apex of the scutellum is depressed; the apical keel is less stout than the lateral. Metanotum with six areae, the lateral square, the basal central sharply pointed (lanceolate) at the base, the apical slightly narrowed at the apex, longer than broad. Abdomen as long as the thorax, smooth. Areolet triangular, the nervures almost uniting in front. Wings highly iridescent.

Kareba gen. nov.

Three cubital cells; the recurrent nervure received in the second transverse median in praediscoidal cellule; radius issuing from shortly behind the middle of stigma; radius in hind wing obsolete. Occiput distinctly margined. Parapsidal furrows distinct, the middle lobe of mesonotum depressed at apex. A large not very deep, depression, of uniform width occurs at the base of scutellum, its sides with a round shallow fovea. Metanotum with two keels in the centre, at the base they unite, diverge obliquely to the top of the apical slope, then side. The first abdominal segment is slightly longer than its width at the apex; it and the following segment closely, strongly, longitudinally striated; the suturiform articulation obsolete, the other segments smooth, the last broadly rounded. Calcariae minute. Tarsi shorter than tibiae. Antennal joints elongate. The male I do not know, but the female should readily be separated from *Rhyssalus*, the only genus with which it could be confounded, by the radius originating behind the middle of the stigma and by the strongly striated two basal segments of the abdomen.

1453 *Kareba flavipes* sp. nov.

Rufous, suffused with black, the median segment and the middle of abdomen almost black, the apical four segments of the abdomen testaceous, tinged with yellow; antennae yellow, tinged with fulvous; legs pale yellow; wings hyaline, iridescent, the nervures and stigma pallid testaceous. Female. Length 5 mm., terebra 1 mm. Acapulco, México.

Front finely closely striated, except at the orbits which are raised. Hind ocelli in a hollow; they are smaller than the anterior. Face minutely punctured. Eyes coarsely faceted. Occiput transverse; there is a fine furrow in front of its bordering keel. Parapsidal furrows striated; the apex of the middle lobe, irregularly rugose. The metanotum coarsely aciculated at the base, the central area irregularly transversely striated; the sides on the apical slope irregularly longitudinally striated, the striae more regularly defined on the top. Prothorax above with a striated bordered furrow all around; the apex of the propleurae irregularly striated. Mesopleurae aciculated. Metapleurae coarsely, closely rugosely punctured and thickly covered with white pubescence.

1454 **Kareba testacea** sp. nov.

Rufo-testaceous, the antennae and legs pallid testaceous, the former darker towards the apex, wings hyaline, the nervures pale testaceous, the transverse cubitals very faint. Female. Length 2 mm., two-thirds the length of the abdomen. Champerico, Guatemala.

Head and thorax smooth, shining; the mesonotum aciculated; the furrows distinct, roundly curved, irregularly striated, the space between them at the apex irregularly longitudinally striated and transversely more finely, the whole forming irregular reticulations. Median segment finely closely punctate, the narrowed base of the middle area irregularly reticulated, the rest closely transversely striated. On the top of the propleurae is a curved band of distinct striae. Mesopleurae closely, finely punctured; an obliquely irregularly striated depression at the top above; the metapleurae finely, closely, obliquely, striated above, the rest finely rugose. First abdominal segment keeled down the middle, the sides finely striated, the second segment finely, closely, longitudinally striated.

1465 **Opius forticornis** sp. nov.

Black, the oral region, mandibles, palpi, legs and base of abdomen, rufo-testaceous; the wings hyaline; antennae stout, black, the scape testaceous in the middle below. Head smooth and shining, the face sparsely, covered with short pale pubescence. Thorax smooth, shining, parapsidal and mesopleural sutures obsolete, median segment impunctate except at stigma, the centre of the radius curved upwards; the third abscissa twice the length of the basal two united; the first transverse cubital nervure is roundly curved outwardly, the transverse median nervure is clearly received beyond the transverse basal; the basal abscissa of the cubitus is curved. Length 1 mm. Chinandega, Nicaragua.

Similar in size and coloration to *O. iridipennis*, but may be known from it by the absence of the pleural furrow, the curved first transverse cubital nervure, which is also received further from the base of the cubitus, and by the stouter antennae, not testaceous at the base.

1464 **Opius iridipennis** sp. nov.

Black, the bases of antennae, oral region, mandibles, palpi, legs, and the greater part of the second abdominal segment, rufo-testaceous; wings

hyaline, highly iridescent, tinged with violet, the stigma and nervures testaceous. Head smooth and shining, the face and clypeus thickly covered with white pubescence, the face with a smooth line down the centre; a stout keel on the front, and it and the vertex bare. Thorax smooth and shining; the parapsidal furrows indistinct. Mesopleurae with a deep, wide, oblique furrow, rounded and narrowed at the base and apex on the lower part. Median segment thickly covered with long pale hair. Abdomen smooth and shining, bluntly pointed at the apex. Ovipositor distinctly projecting. Antennae much longer than the body, 23-jointed. Stigma stout, lanceolate; the radius issues from the apex of the basal fourth of the stigma; it reaches to the apex of the wing and is slightly curved upwards; it is clearly longer than the basal two united; the second transverse cubital nervure is faint; the second cubital cellule at the apex is not half the length of the base; the recurrent nervure is received shortly beyond the transverse cubital; the transverse median nervure is almost interstitial; the transverse basal nervure is curved and dilated at the apex.

The male has the base of the antennae more broadly testaceous; the face is suffused with fuscous, which is also the case with the median segment, and it appears to be finely punctured; the basal half of the abdomen is testaceous. The ovipositor is as long as the basal two joints of the hind tarsi united. Length 1 mm. Chinandega, Nicaragua.

PROCTOTRUPIDAE.

1441 *Macroteleia rufipes* sp. nov.

Black, the antennal scape, the under side of the narrowed basal part of the flagellum and the legs, red; the apex of the hinder femora broadly infuscated; wings hyaline, the nervures black. Female. Length 3.5 mm. San Marcos, Nicaragua.

The pedicel of the antennae and the first funicular joint each as long as the following two joints united, the club joints clearly broader than long. Front and vertex minutely punctured. Thorax alutaceous; the parapsidal furrows deep, complete, a transverse impression between them at the apex. There is a row of foveae at the apex of the scutellum. Basal segments of abdomen closely, minutely punctured. Pleurae closely minutely punctured, except the depression on the apex of the mesopleurae which is large, deep, smooth and shining. Abdomen three times as long as the thorax, the basal segment not keeled in the middle. Wings hyaline, the nervures black, the stigmal branch with a small knob at the apex; it is about one third shorter than the marginal; the hair fringe around the apex is short, but distinct; the wings reach to the middle of the penultimate segment and are highly iridescent. Tegulae black.

Macroteleia testaceinerva sp. nov.

Black, the antennae to the club, and legs rufous. Wings almost hyaline, the nervures testaceous. Female. Length 4.5 mm. Panama (coll.?).

Opaque, covered with a white microscopic pubescence. The pedicel and the first funicular joint of the antennae very long, of equal length, the latter as long as the following two joints united, these being subequal and longer than the succeeding joint; the club is stout, clearly separated, the joints, except the last, wider than long, the last conical, longer than wide. Thorax alutaceous, the parapsidal furrows distinct; the scutellum behind with a row of distinct foveae; down its centre is a smooth line, at its apex is a curved rufous keel, behind which are some indistinct depressions. On the metanotum is a central and three lateral keels, the central being the longer, the space between them depressed. Propleurae with a row of large foveae round the apex. Mesopleurae obscurely, irregularly striated, the apex with a large deep depression, deepest in the middle with the sides oblique. Metapleurae irregularly reticulated. The abdomen long, fully four times as long as the thorax, irregularly longitudinally striated, its basal segment keeled down the middle, the striae becoming gradually weaker and are absent from the apical two segments. The wings reach to the middle of the fourth segment; they are ciliated round the apex; the stigmal vein ends in a small knob and is about one-third shorter than the marginal. Tegulae testaceous.

CHALCIDIDAE.

1421 *Spilochalcis pilosoma* sp. nov.

Black, largely marked with red and yellow on the head, thorax and legs, the flagellum of the antennae fulvous, the third to eighth black above, the scape yellow; wings hyaline; the femora with about sixteen small black teeth. Female. Length 3 mm. San Marcos, Nicaragua.

Head rufous, the antennal depression and centre of face black, the outer edge of the antennal depression, the yellow extending to the eyes on the lower half, an oblique triangular mark below each antenna, the hinder edge of the vertex, the line interrupted by the ocelli and by the furrow in the centre, and a line on the upper half of the outer orbits, yellow; the occiput black. Mandibles rufous. Pronotum rufous; three yellow lines in the centre, the lateral longer than the central. Mesonotum rufous, a large transverse mark, with rounded sides, in the centre and a smaller, longer mark compared with its breadth, on the base of the lateral lobes, black. A small squarish mark in the centre at the base, the sides of the middle lobe, the lines broader at the apex and a transverse mark on the sides at the apex, yellow. Scutellum rufous, an interrupted line at its base, a mark on either side at the apex, an indistinct line between them, and the postscutellum, yellow. The notum at its sides black with a yellow mark on the inner side at the base and on the outer at the apex. Metanotum black, with two rufous marks in the center at the base. Pleurae black, a rufous spot under the tegulae and two yellow ones in front of this spot; and there is a large rufous mark in the centre of the mesopleurae. Metapleurae black. Head, pro- and mesonotum, scu-

tellum, and centre of mesopleurae strongly closely punctured. Metanotum reticulated; the base is bordered by a stout transverse keel, behind which in the centre, are three stout longitudinal keels close together; next to this are two large areas divided by a stout keel; they are widest on the outer side. Abdominal petiole short, not much more than twice longer than wide; its sides slightly hollowed, the upper edge broad. The four front tibiae and tarsi are pallid yellow, the femora rufous; hind coxae rufous, black above, the femora rufous, with a black mark in the apex above, bordered behind by a yellow line, basal half of tibiae black, yellow in the middle, the apical half rufous, hind tarsi white.

1419 *Spilochalcis Managuaensis* sp. nov.

Yellow, a line between the ocelli, the centre of occiput, a broad band round the base of the mesonotum, from the outer edge of this a broad line runs along the inner side of the outer lobe of the mesonotum, its apex being obliquely narrowed, from its center a broader band runs to the scutellum, this line being slightly narrowed at the base and apex, a broad line at the base of the scutellum, this line being obliquely narrowed at the sides, where it is united to a short longitudinal line, a broad, longish line, narrowed at base and apex in the centre of scutellum, a mark at the sides of postscutellum, the greater part of the metanotum, four transverse bands (the second much larger than the others) on the back of the abdomen, the apical segments almost entirely, a large somewhat oval mark in the centre of the hind coxae, a line on the base of the hind tibiae, and a smaller mark opposite it on the tibiae, black. Femoral teeth small, sixteen in number. Wings hyaline. Flagellum of antennae black fuscous below. Abdominal petiole about four times longer than wide, about one third the length of the hind coxae. Metanotum raised in the centre, this part bounded by keels, the base depressed, the apex smooth, raised, flat, the sides depressed at the base, irregularly reticulated. Head smooth. Pro- and mesonotum, with scutellum, closely and strongly punctured, the middle of apex of scutellum transverse, the sides broadly rounded.

1423 *Spilochalcis denticoxis* sp. nov.

Yellow, tinged with rufous, flagellum of antennae, a broad band on the malar space, the depression at the base of mesopleurae, the central depression, metarsternum, a broad line on the underside of the hind coxae, black. Wings hyaline. Female. Length 4 mm. San Marcos, Nicaragua.

Head smooth, the upper half of front on the sides to the fore ocellus closely obliquely striated. Antennal scape dilated above, long, reaching distinctly above the vertex. Mesonotum obscurely, transversely, striated, thickly covered with black hair; scutellum punctured, thickly covered with long black hair, its apex depressed, bordered by a stout keel which curves down in the centre at the apex. Metanotum short, reticulated, the central area longer than broad, rounded behind, transverse at apex, the upper half of the sides depressed, the lower broadly rounded, keeled

on the outer and inner edges. Abdominal petiole hardly half the length of the hinder coxae, which are longer than usual, as long as the femora, and narrowed towards the apex. Femora with about sixteen small, round, black, closely packed teeth, except at the base where they are more widely separated; the basal is large and sharper than the others; on the upper side of the hind coxae at the apex are two teeth, the upper the larger.

1420 *Spilochalcis Segoviae* sp. nov.

Yellow, largely tinged with rufous, the abdomen largely blackish (perhaps discolored), flagellum of antennae and ovipositor sheath black; wings hyaline, a distinct cloud at the stigma; femoral teeth small, black, fourteen in number. Female. Length 5-6 mm. San Marcos, Nicaragua.

Antennal scape slender, reaching above the vertex. Sides of front and vertex shagreened, sparsely, shortly haired; the rest of the head smooth, shining. Mandibular teeth black. Mesonotum and scutellum sparsely covered with black hair, the middle lobe obscurely striated, the lateral striated on the inner side at the apex, the outer punctured. Metanotum reticulated, the basal central area is of equal width throughout and has a strong keel down the centre, the apical is horse-shoe shaped. Abdominal petiole short, about three times longer than broad, about one third the length of the hind coxae, which have a sharp, short tooth on the apex above, followed by two slight tubercles. The antennae are long and slender.

1424 *Spilochalcis Belti* sp. nov.

Pale yellow, the flagellum of antennae brownish, black on top, femoral teeth minute, black, sixteen in number, apex of scutellum rounded, the bordering keel stout, thickened in the middle; abdominal petiole short, about twice longer than broad, about one sixth of the length of the hind coxae, which are distinctly longer than the femora. Metanotum with a central basal keel which bifurcates round the top of the apical slope, the other keels are indistinct. Middle lobe of mesonotum obscurely transversely striated, the scutellum shagreened; both are covered with short white pubescence. Scape of antennae long compared with the flagellum, projecting considerably above the top of the vertex. Ovipositor largely projecting. Length 4 mm. Chinandega, Nicaragua.

1422 *Spilochalcis Marcosensis* sp. nov.

Yellow, rufous above, the flagellum of antennae fuscous, black above; wings hyaline, the nervures fuscous, a small cloud at the stigmal branch; the head and thorax above thickly covered with short fuscous pubescence; abdominal petiole longish, fully half the length of the hind coxae, slender; femoral teeth small, there are eleven clearly separated teeth and three or four united more or less, at the base. Antennal scape slightly curved, the apex almost reaching to the hind ocelli. Pleural sutures marked with black. Mesonotum shagreened; the scutellum finely striated, its apex broadly rounded. Metanotum shagreened; on the apical half is an area in the centre which is somewhat obliquely narrowed above,

where it is united to the base by an indistinct keel; there is a curved indistinct keel on the sides. Male. Length 3 mm. San Marcos, Nicaragua.

1418 **Tetrasmicra Bakeriana** sp. nov.

Yellow, the flagellum rufous, black above, the greater part of the occiput, a broad curved line on the base of the mesonotum, not reaching to the sides, from its centre runs a thick line which becomes gradually, roundly dilated and continued to the scutellum as a thin line; on the sides is a broad line reaching from the base to the apex, straight on the inner side, roundly dilated on the outer side and united to a transverse band on the apex, this being dilated beyond it on the outer side; from it a stout line runs down the scutellum, it becoming roundly dilated at the apex. The sides of the scutellum below, at the tegulae, are black. Legs colored like the body, the hind trochanters, a large mark on the outer side of the hind femora at the apex, a slightly smaller one between the two apical teeth, the teeth, the base of the third abdominal segment broadly, and its sides more narrowly, black. Wings hyaline, the nervures black. Male. Length 6 mm. San Marcos, Nicaragua.

Face and clypeus smooth and shining, sparsely haired, the front and vertex coarsely punctured. Pro- and mesonotum more strongly punctured as also the scutellum; there is a thin plate-like projection on the apex of the latter, with the sides broadly roundly dilated. Metanotum stoutly reticulated. The central two teeth of the hind femora are longer, sharper and thinner than the others, the apical is stouter and much broader at the base; the apical is widely separated from the third and becomes sharper towards the apex. Abdominal petiole two-thirds the length of the hind coxae.

Plagiosmicra gen. nov.

Hind femora armed with four long, sharp-pointed oblique teeth in the centre, two short, stumpy ones at the apex close together and two small, sharp, clearly separated ones at the base. Apex of the scutellum broadly transverse. Antennae 12-jointed, short and thick. Metanotum short, the sides broadly rounded. Abdomen short, bluntly rounded; ovipositor short. Parapsidal furrows complete, clearly defined.

Allied to *Octosmicra* and *Protoeceras*, from both of which it may be known by the short bluntly pointed abdomen; from the latter it may further be separated by the complete parapsidal furrows; the former has the apex of the scutellum ending in "an emarginate bidentate plate", cf. Ashmead, Mem. Carnegie Museum, I, 252.

1417 **Plagiosmicra Ashmeadi** sp. nov.

Yellow, the greater part of occiput, a black line in the centre of the mesonotum at the base, prolonged from the outer edge in a curved line to the centre, where the two unite in the centre, and from there are continued as a single line to the outer edges, of similar thickness; there is a short line on the base of the lateral lobes, from which runs to beyond the middle a stout line, which is straight on the innerside; on the outer

side it becomes gradually wider to beyond the middle, then roundly narrowed to the apex, a line on the depression at the base of the scutellum in the middle, a line in the centre of the latter, which becomes gradually wider to the rounded apex, a line in the centre of the basal mesopleural suture, a large broader one in the central, the apex of the hind coxae, their trochanters, a streak in the centre of the hind femora, the femoral teeth and the hinder side of the hind tibiae, black; there is a large brown mark on the femora at the base and apex of the femoral teeth. Flagellum of antennae brown, black above, the scape yellow. Wings hyaline, the nervures black. Female. Length 5 mm. Chinandega, Nicaragua.

Head shining, above covered with black hair. Mesonotum and scutellum strongly closely punctured; the apex of the scutellum depressed behind the keel, marked sparsely with short keels. Metanotum with two regular rows of area, the basal areae broader compared with their length than the apical; the apical slope smooth. Abdominal petiole three times longer than wide, about one third of the length of the hind coxae which are more dilated, broader compared with their length, than usual; they are about half the length of the hind coxae. The third to sixth dorsal segments of the abdomen on the sides bear interrupted black bands, these becoming gradually smaller. Pleurae strongly, but not closely punctured, the mesopleurae end in a sharp point in the centre, the base and apex, from this, have oblique slopes.

Platychalcis gen. nov.

Mesonotum and scutellum flat, on one level; the apex of scutellum rounded, bordered by a row of large foveae, the base separated from the mesonotum by a transverse furrow. Metanotum shorter than the scutellum, with an oblique slope; in its centre is a stout keel which bifurcates shortly beyond the middle. Antennae stout, 13-jointed. Abdomen with a petiole fully four times longer than wide. Four front femora narrowed on the basal half; the hinder greatly thickened, with at least eight small blunt teeth.

The second abdominal segment is as long as the petiole and about half the length of the following segments united. Antennal scape stout, not reaching to the ocelli. Occiput transverse, temples very short, almost obsolete, the eyes reaching very far back. Ocelli large, placed in a curve on the outer edge of the vertex. Eyes large, slightly converging above. Front very little hollowed. The head has not an oblique slope from the vertex to the antennae, being formed more as in *Chalcis*. Parapsidal furrows, narrow, shallow.

In Ashmead's arrangement this genus would come in near *Halticella*. cf. Mem. Carnegie Museum, 255.

1425 **Platychalcis flavicollis** sp. nov.

Black, shining, the inner eye orbits to near the top, the hinder part of the pronotum broadly, two triangular marks on the scutellum, the narrow end at the base, yellow; legs yellow, all the coxae black, the

femora suffused with dark fulvous, the hinder femora black to shortly beyond the middle; hind tibiae dark rufo-testaceous, black below; hind tarsi yellowish. Female. Length nearly 5 mm. Chinandega, Nicaragua.

Face smooth, shining, and projecting in the centre, dilated above and below and with a wide depression on either side of its middle. The apex of the pro- and of the mesonotum with large, scattered punctures, the base of the mesonotum with smaller ones. Scutellum more sparsely and less strongly punctured. Side of metanotum bordered with a stout keel, forming with the central keel a large area narrowed behind. The apical area has a central keel and a shorter keel on either side. The mesopleural depression strongly closely striated; the rest rugosely punctured. Metapleurae bearing closely set large deep round punctures, which are smaller above. The pleurae sparsely covered with white hair.

Flagellum of antennae brownish below, thickly covered with stiff pubescence.

1434 *Megastigmus fulvus* sp. nov.

Fulvous, tinged with yellow; the head metallic green tinged with golden, the face and clypeus, except along the sides golden; legs pale yellow, the hind tibiae blackish, except at the apex; the antennae with the scape yellow, the flagellum blackish, fuscous below; wings clear hyaline, the nervures fuscous. Female. Length slightly over 2 mm.; the ovipositor 2 mm. San Marcos, Nicaragua.

Head closely and strongly punctured, the outer orbits sparsely, indistinctly punctured, sparsely covered with short white glistening pubescence. Thorax smooth and shining; the pleurae more yellowish in tint than the mesonotum; the sternum metallic green as is also the base of the metanotum. The second abdominal segment has two large black marks on the back.

1446 *Syntomaspis purpureomaculata* sp. nov.

Metallic green, largely marked with blue and to a less extent with brassy tints; the antennal scape, the four front tibiae and tarsi testaceous; the hind tibiae dark fuscous except at the base, the outside dark blue; the hind tibiae white; wings clear hyaline, the nervures fuscous. Female. Length 2 mm., terebra 2.5 mm. Chinandega, Nicaragua.

The head in front and the upper part of the thorax covered with deep, round, clearly separated punctures, as is also the basal division of the scutellum; its hinder part closely punctured. The central part of the pronotum is dark coppery, finely, closely, minutely, transversely striated. The centre of mesopleurae finely, closely striated and with a dark purple stripe down its apex. Metapleurae smooth and shining, dark purple below; the upper part of the propleurae punctured, but less strongly; like the mesonotum; the lower part finely, closely striated. The base of abdomen brown as are also the eyes. Tegulae fuscous.

1451 *Torymus Bakeri* sp. nov.

Dark green, variegated with blue and brassy tints; scape of an-

tennae rufo-testaceous, the tibiae rufo-testaceous, the tarsi white, the hind coxae violaceous, closely punctured; wings clear hyaline, the nervures testaceous. Tegulae dark green. Female. Length 2.5 mm., terebra nearly 2 mm. San Marcos, Nicaragua. But also at Managua, Chinandega, and at Champerico, Guatemala.

Head sparsely covered with longish white hairs each issuing from a puncture. Mandibles dark testaceous, darker at the apex. Mesonotum and scutellum closely minutely punctured; the pro- and meso-pleurae closely but not quite so strongly punctured; the metapleurae smooth. Abdomen smooth, largely marked with green and brassy tints, the apical segments bearing longish white hairs. The Chinandega example is smaller and darker coloured than the others.

***Torymus aztecus* sp. nov.**

Greenish blue, the abdomen for the most part blue, the pleurae largely blue and violaceous, the coxae and femora blue, tinged with green, the tibiae black, the tarsi white; wings hyaline, the nervures black; antennae black, the scape testaceous. Female. Length hardly 2 mm., ovipositor as long as the body. México (Coll?)

Head and upper part of thorax with thimble-like punctures, the thorax more strongly than the head. Pleurae smooth, largely violaceous. Eyes brown. Abdominal segments narrowly banded with black. Tegulae fuscous.

1429 *Perilampus reticulatus* sp. nov.

Head and upper part of the thorax dark brassy, the head and lateral lobes of mesonotum bright fiery red; the pleurae blue, abdomen brassy, tinged with green; legs for the most part green, the tibiae dark green, their base and apex and the tarsi white; wings hyaline, the nervures testaceous; flagellum of antennae black, brownish at the apex. Female. Length 3 mm. Chinandega, Nicaragua.

Face and clypeus dark brassy, the apex of the latter depressed; the lower part of the face with thin oblique striae, extending from the eyes to the clypeus. Frontal depression sharply margined round the edges; the vertex on the sides obliquely striated, the striae somewhat irregular and clearly separated. Pronotum stoutly keeled before and behind, the space between irregularly reticulated, with a central transverse keel. Mesonotum and scutellum closely, regularly reticulated, except the inner side of the lateral lobe of the former which is smooth and fiery red. Scutellum gradually, roundly narrowed to the apex, the lower edge of the latter with a distinct projecting border, and with a shallow, but distinct incision in the middle. Top of metanotum hollowed, bordered above and below and with longitudinal keels, below this is a curved keel forming an area. Pleurae smooth and shining, the meso- with an irregular, curved, crenulated furrow, the metapleurae irregularly rugose. Pubescence dense and white.

1428 *Perilampus laeviceps* sp. nov.

Black, the thorax dark brassy, the pleurae dark blue, the legs dark

green, the knees, tibiae and tarsi testaceous; wings hyaline, the nervures testaceous; antennal scape dark blue, flagellum blackish, fuscous below. Female. Length 2.5 mm. San Marcos, Nicaragua.

Head smooth and shining. Pronotum depressed at the base, the raised apex with numerous longitudinal furrows in the central part, the lateral parts rugosely punctured. Mesonotum and scutellum closely, regularly, rugosely reticulated, the latter more widely than the former. On the upper part of the apex of the propleurae is a fovea, hardly separated from a much larger, deeper pyriform one; on the base of the mesopleurae is a large, deep depression, longer than wide, followed below by two much smaller oval ones; behind is an elongated fovea, followed by three round ones, with another in front. Metanotum stoutly, irregularly reticulated.

1427 *Perilampus albitarsis* sp. nov.

Dark blue, the upper part of the thorax dark brassy; the tibiae black, the tarsi pale testaceous; flagellum of antennae black, wings clear hyaline. Female. Length 3 mm. San Marcos, Nicaragua.

Head smooth, the vertex with a few fine curved striae; the face and orbits covered with white pubescence. Thorax above closely reticulated, except the inner side of the lateral lobe of the mesonotum; scutellum gradually roundly narrowed to the apex, which has, in the middle, a small blue depression. Metanotum smooth, surrounded by a rugose border. Base of propleurae rugose, the hinder part smooth, blue; the apex broadly, deeply depressed and crenulated and with a fovea, rounded at the base, open and slightly narrowed at the apex. Base of mesopleurae with a larger upper, an elongated middle and a smaller round fovea, the middle one being placed behind the others; the hinder region with a curve of deep foveae. Metapleurae bearing large, deep irregular foveae. Legs thickly covered with white hair. Tegulae dark blue. Back of abdomen sparsely covered with erect hairs; the sides and apex are blue.

1430 *Lirata iridicolor* sp. nov.

Black, the thorax bronzy, the abdomen except the petiole and the base of second segment rufo-testaceous; scape of antennae yellow, the flagellum black, fuscous towards the apex; legs testaceous, the coxae and trochanters black; wings hyaline, the stigma black. Female. Length nearly 4 mm. Chinandega, Nicaragua.

Head smooth, shining, the mandibles testaceous. Middle lobe of mesonotum finely transversely striated, the striae widely separated; the apical broken in the middle by a longitudinal furrow; sides of scutellum bordered by a distinct keel, the centre with some fine longitudinal furrows. Scutellar spines reaching almost to the middle of the abdomen, stoutly longitudinally striated, slightly twisted, the apices slightly approximating. Pleurae smooth, the meta- thickly covered with longish white pubescence; the furrow below the tegulae wide, the sides obliquely sloped, the centre furrowed, closely, finely striated. The thorax has a

distinct violet and purple iridescence. Abdominal petiole not much longer than the hind coxae.

1432 *Lirata fulvicornis* sp. nov.

Black, antennae rufo-fulvous, darker towards the apex; the legs yellow, their coxae black; wings hyaline, the nervures black; the apex of abdomen broadly rufous, the petiole somewhat more than twice the length of the hind coxae and longer than the rest of the abdomen. Mandibles dark testaceous, black at the base. Clypeus bronzy, the spines reach to the apex of the abdomen. Male. Length 4 mm. Managua, Nicaragua.

Vertex longitudinally striated, the striae clearly separated; the front less distinctly obliquely striated, as is also the side of the face, its centre more closely and finely striated. The malar space transversely striated, the striae more curved in front than behind; scutellum and metanotum stoutly longitudinally striated. Propleurae densely covered with longish white pubescence; mesopleurae with a long deep depression, extending from the top to the bottom, smooth, the rest irregularly striated; the striae behind the depression united in pairs at the apex, the lower part of metapleurae with two or three large foveae below at the base. Scutellar spines reaching to the apex of the abdomen, stout, striated.

1431 *Lirata sulcifacies* sp. nov.

Black, with a slight violaceous iridescence, the thorax tinged with brassy; scape of antennae fulvous yellow; the legs pale yellow; wings hyaline, the stigma black; scutellar spines curved, their apices slightly turned outwards, stoutly striated; the face with a wide deep furrow down the centre, the sides roundly curved outwardly. Male. Length 2.5 mm. Chinandega, Nicaragua.

Front and vertex finely striated, the striae curved; the face more finely striated on the sides; the malar space sharply obliquely striated. Middle lobe of mesonotum stoutly, widely striated; the lateral smooth; the scutellum similarly, but longitudinally striated, the striae on the latter more curved. Apex of propleurae striated; mesopleurae with an irregular fovea at the base below, the apex not deeply depressed; metapleurae covered with white pubescence. Abdominal petiole more than twice the length of the hind coxae and longer than the rest of the abdomen. A species easily known by having on the face a wide deep furrow, dilated at the apex.

1431 *Lirata nigriventris* sp. nov.

Dark bronzy, the head darker coloured, the abdomen black, slightly violaceous at the base, scape of antennae testaceous; the legs pale yellow; thoracic spines reaching slightly beyond the middle of abdomen; face and clypeus with a broad keel, contracted greatly in the middle, clypeus distinctly margined, the apex transverse in the middle, its sides broadly rounded, the sides slightly bent inward and with a large, longish depression at the top. Mandibles testaceous. Wings hyaline, nervures black. Female. Length nearly 4 mm. Chinandega, Nicaragua.

Head smooth and shining. Middle lobe of mesonotum transversely striated, the striae on the apical half being stronger and more widely separated than those on the basal. Scutellum longitudinally striated, widely and strongly in the centre, more closely and finely on the sides. Metanotum on the centre with two keels which unite beyond the middle, on either side are some keels which converge towards it, and there are a few longitudinal ones on the sides. Pleurae smooth, the base of the mesopleurae indistinctly longitudinally striated; on the lower part of the base of the mesopleurae is a deep vertical fovea followed by a shallow furrow; on either side of this is a fine curved keel, running to its apex. Thoracic spines stout, curved, stoutly keeled, the central keel being the stouter. The apex of the abdomen is broadly testaceous. The front of the thorax, seen from the front, is broadly rounded; abdominal petiole not much longer than the hind coxae. There is a row of foveae in the centre of the mesopleurae above. The third and fourth antennal joints are distinctly longer than the fifth, the third clearly narrowed at the base.

Allied to *L. furcata* and *L. iridicolor*. The former may be known from it by the mesonotum being more distinctly depressed below the pronotum and scutellum and by the latter being clearly bordered on the apex, the latter by the testaceous abdomen, and by the shorter and thicker third and fourth antennal joints.

1435 *Eudecatoma fulva* sp. nov.

Fulvous, the legs and pleurae paler, more yellowish in tint; the wings hyaline, the nervures dark testaceous, the stigmal spot longer than wide and rounded behind. Female. Length 2 mm. Managua, Nicaragua.

Smooth and shining, the flagellum of antennae fuscous. Eyes brown. Antennae short and thick, the pedicle clearly separated, narrowed at the base, twice longer than thick at the apex. The parapsidal furrows narrow. The body is much smoother, almost impunctate as compared with *Decatoma*.

1437 *Eurytoma erythroaspis* sp. nov.

Black, the antennal scape below, face, clypeus, oral region, orbits broadly, narrowly above, and mandibles, except at the apex, yellowish tinged with rufous, propleurae, the apical two-thirds of the mesonotum broadly in the middle and the scutellum except on the apical slope, rufous. Legs pallid yellow. Wings clear hyaline, the nervures pallid testaceous. Male. Length 3 mm. Chinandega, Nicaragua.

Head sparsely covered with longish white hairs; the face and oral region smooth; the front and vertex coarsely shagreened and punctured. Thorax above coarsely and closely punctured, the punctures round and clearly separated, especially in front; on the metanotum they are transverse. Mesopleurae coarsely shagreened, the apex punctured, smooth in front of this and with an elongated, large fovea, narrow in front, becoming widened behind. Metapleurae rugose, thickly covered with white

hair. Antennal hairs longer than usual, nearly as long as the antennal scape, fuscous, the middle joints are irregularly dilated, the last joint conical, not much shorter than the penultimate, which is cylindrical, not dilated and twice the length of the preceding; the latter is not dilated like those behind it.

1450 **Eurytoma xanthopus** sp. nov.

Black, the legs except at the base pale yellow, the hind femora infuscated; scape of antennae pale yellow, the flagellum fuscous, thickly covered with white pubescence; wings clear hyaline, highly iridescent, the nervures pale. Female. Length 2 mm. Champerico, Guatemala.

Head covered with stiff silvery hairs, closely punctured. Basal joints of scutellum shining, bare, longer by one-half than wide, narrowed at base and apex. Pro- and mesonotum closely and strongly punctured; the scutellum is more widely punctured, the punctures almost forming reticulations. Metapleurae thickly covered with long silvery pubescence. Abdomen smooth, shining, the sheaths of the ovipositor largely projecting, clearly projecting beyond the last segment, which is sharply produced and more sharply pointed than usual. Tegulae testaceous. The tarsi are whiter than the rest of the legs.

1443 **Eurytoma pilicornis** sp. nov.

Black, the antennal scape and apex of femora and tibiae rufo-testaceous, the tarsi white. Wings hyaline, the nervures pale testaceous. Flagellum of antennae thickly covered with silvery hairs. Head and thorax closely and strongly punctured, the punctures mostly round and clearly separated. Metanotum strongly aciculated, an impressed line, smooth and shining above, in the middle. Mesopleurae finely, closely, longitudinally striated, smooth above. Female. Length 2 mm. Chinandega, Nicaragua.

Metanotum with an oblique slope. Antennal scape slender, not dilated, flagellum stout, slightly but distinctly dilated towards the apex, the first joint narrowed at the base, distinctly longer than broad, the following as broad as long. Head wider than the thorax. Cubitus curved slightly dilated on the upper part at the apex. Abdomen sharply pointed at the apex, shorter than the thorax, smooth and shining. Tegulae fuscous.

1436 **Tetrastichus basimacula** sp. nov.

Head and thorax rufo-testaceous, the mesonotum in the centre broadly blackish, the pronotum more yellowish in tint; abdomen black, slightly suffused with brownish, the basal segment orange yellow; the third and following joints of the antennae black; legs testaceous; wings hyaline, the nervures testaceous. Female. Length 4 mm. San Marcos, Nicaragua.

Head shining, the ocellar region with a black transverse stripe; the outer ocelli joined to the eyes by a furrow; occiput, except round the edges, and apex of mandibles, black. Along the outer border of the middle lobe of the mesonotum is a crenulated furrow, its central furrow

narrow; parapsidal furrows deep. Scutellar furrows blackish, the lateral narrower but more clearly defined than the central pair. Postcutellum pale orange yellow. Abdomen longer than the head and thorax united, its apex sharply produced. Apex of mesopleurae with a black stripe, the metapleurae with a broader one. The pleurae aciculated, except on the centre of the mesopleurae. The testaceous colour of the head and thorax is tinged with orange.

1444 ***Tetrastichus Nicaraguaensis*** sp. nov.

Dark green, largely marked with brassy tints; legs testaceous, the coxae and bases of femora broadly dark green; scape of antennae testaceous, the flagellum blackish fuscous; the nervures testaceous. Female. Length nearly 2 mm. Chinandega, Nicaragua.

Antennae stout, thickly covered with white pubescence. There is a distinct curved furrow in front of the ocelli. Inner orbits distinctly margined, punctured, the sides of the face with a deep wide furrow, which curves inwardly below. Oral region fiery red. Thorax closely punctured. Parapsidal furrows wide, deep, bordered on the inner side by some short, transverse furrows; the central furrow narrow; the scutellar furrows bordered outwardly by some transverse ones; the lateral furrows distinct. Metanotum with a stout keel in the centre, a thinner less distinct one either side and two short oblique ones on the outer side in the middle. Pleurae strongly punctured. Abdomen stout, not much longer than the thorax; it is thickly covered with short, white hair.

1439 ***Macreupelmus pulchriceps*** sp. nov.

Blue, largely marked with coppery and brassy tints on the head and upper part of the thorax; the head more brilliantly coloured than the thorax and having also violaceous tints; the four front legs rufo-testaceous, their coxae brassy blue as are also the hinder pair, the hind femora blue, testaceous at base and apex, the tibiae black, pale testaceous at base, white at the apex; the basal two joints of the hind tarsi white, the others black; the ovipositor as long as the middle tarsi, the extreme apex black, followed by a large white band, which extends slightly beyond the middle, the rest being black; the middle tarsi blackish below, the basal joint closely covered with stiff stout hairs; antennal scape rufo-testaceous, the flagellum black; clypeus with the apex slightly, roundly incised. Female. Length 3.5 mm., terebra 1 mm. San Marcos, Nicaragua.

Antennae longer than the head and thorax united, slender, slightly dilated at the apex; the basal joints of the flagellum metallic blue and dark brassy. Head closely and strongly punctured; the front depressed, roundly but not deeply in the centre; the malar space with a distinct furrow reaching from the eyes to near the apex. Mandibles black, red at the base. The middle lobe of the mesonotum is rounded at the base and becomes gradually narrowed to the apex; the apex of the mesonotum has the sides clearly raised, transverse. Scutellum fiery red, obliquely

narrowed towards the base. Body and legs sparsely covered with white hairs. Wings hyaline, the nervures testaceous.

1440 *Brasema maculipennis* sp. nov.

Dark violaceous, largely marked with brassy, green, and blue tints; the second abdominal segments for the greater part pale yellow; legs black and fuscous, with metallic tints, the fore tibiae and tarsi testaceous, the antennae black, the scape fiery red; wings fuscous, a curved hyaline cloud, narrowed in the middle, behind the stigma, the apical third being also hyaline. Male. Length 3 mm. Managua, Nicaragua.

Head and thorax densely covered with white pubescence and closely punctured, the face with a narrow keel in the centre, the upper half of the malar space furrowed. Lateral lobes of the mesonotum with a broad blue stripe on the inner side. Scutellum dark emerald green, closely, distinctly punctured. Sides of metanotum smooth, shining, blue and green, the centre bronzy. Pleurae smooth and shining. The apical segments of abdomen green. Probably the metallic tints, blue green, violet etc., vary considerably.

1447 *Brasema maculicornis* sp. nov.

Dark violaceous, largely marked with blue, green and brassy tints, the second abdominal segment with a narrow pale yellow band; the antennal scape and the four and fifth joints of the flagellum rufo-testaceous; wings smoky, highly iridescent, the base and an oblique cloud narrowed below at the base of the stigma and another hyaline cloud opposite it. Legs blackish, the knees broadly and the fore tibiae and tarsi testaceous. Female. Length 2.5 mm. Champerico, Guatemala.

Head closely punctured, the eye orbits less strongly punctured than the rest, the malar furrow indistinct; the face with a short smooth keel in the centre. Lateral lobes of mesonotum blue. Scutellum closely punctured, dark emerald green. Pleurae and abdomen smooth and shining. The white abdominal band is broader and more conspicuous on the ventral than on the dorsal surface. Ovipositor testaceous.

***Rekabia* gen. nov.**

Metanotum smooth and shining, a stout middle keel dilated at the base, a narrowed smooth one bordering the sides and a stout, opaque, transverse one on the apex. Antennae apparently 7-jointed, the scape long and slender, the pedicle about three times longer than it is wide at the apex; the joints of the funicle elongate, narrowed at base and apex; the club fully one-half longer than the preceding joint, sharply narrowed at the apex. Mesonotum trilobate, the middle lobe keeled down the centre; at its apex is a transverse keel separating it from the scutellum. Scutellum large, bounded in front by two oblique deep furrows, the sides below by a narrow furrow. Abdominal petiole stout, about twice longer than broad, the second segment is longer than it, the third nearly as long as both united. Occiput transverse, temples almost obsolete, eyes large, the head triangularly produced below them; the apex

of the clypeus rounded; malar space two-thirds the length of the eyes. Wings ample; nervures as in *Entedon*.

Allied to *Pleurotropis*. Except on the mesonotum, which is striated, the whole body is smooth and shining. There is a curved fovea in front of the ocelli, and on either side, close to the eyes, is another fovea from which issues a long hair.

1438 ***Rekabia testaceipes* sp. nov.**

Black, shining, the antennae, tegulae, and legs rufo-testaceous, the second abdominal segment pale testaceous; the clypeus and mandibles testaceous, more rufous in tint; wings hyaline, the nervures testaceous. Male. Length 2 mm. San Marcos, Nicaragua.

Smooth and shining, except the mesonotum, which is transversely striated on either side of the central furrow. Scutellum closely, minutely, but distinctly punctured. Eyes brown. Abdominal petiole finely, closely rugose.

FOSSORES.

3059 ***Rhopalum Nicaraguaense* sp. nov.**

Black, scape of antennae, four anterior legs, hind trochanters, base of tibiae, narrowly behind, more broadly in front and the apex of the tibiae narrowly in front, the mandibles, except at the apex, tubercles and tegulae, yellow; wings clear hyaline, the nervures black. Female. Length 4.5 mm. San Marcos, Nicaragua.

Opaque, smooth. Face, clypeus, and outer orbits below thickly covered with silvery pubescence. Eyes very large. Flagellum testaceous below. Pleurae and metanotum thickly covered with silvery pubescence. Metanotal area clearly defined all over by furrows; the metanotum aciculated; the central furrow wide on the apex, the sides clearly margined by a keel. Abdominal petiole as long as the following two segments united; the apical segments testaceous laterally.

This is the smallest known species of *Rhopalum* or *Crabro*, from Central America. The hind tibiae are greatly dilated and narrowed at the base; they are flattened on the inner side and have there a distinct margin behind; radical cellule wide; the apical abscissa of the radius with a straight, oblique slope.

3054 ***Cerceris Chinandegaensis* sp. nov.**

Black, the clypeus, lower two-thirds of the inner orbits, antennal keel, antennal scape below, two lines on the pronotum, apical half of scutellum, post-scutellum, outer part of tegulae, a broad band on the apices of the first and second abdominal segments, a narrow line on the sides of the third and a narrow complete one on the apices of the fourth, fifth, and sixth, yellow; the apices of the four front femora, their tibiae and tarsi, the basal half of the hind tibiae and the basal joint of the hind tarsi, yellow. Scape of antennae yellow, of flagellum brownish,

below. Wings hyaline, highly iridescent, tinged with fuscous; the nervures and stigma black. Male. Length 7 mm. Chinandega, Nicaragua.

Head strongly rugosely punctured, almost reticulated on the vertex. Apex of clypeus black, transverse in the middle, the sides rounded. Mandibles with a yellow streak on the basal half above. Metanotal area smooth and shining, a narrow furrow down the centre. Pygidial area aciculated, sparsely punctured, not much narrowed towards the apex; epipygidium with a shallow incision at the apex. Comes near to *C. obsoleta*.

3055 ***Cerceris Bakeri* sp. nov.**

Black, the clypeus except at the sides and apex, a large mark, rounded on the outside, on the upper inner orbits, touching the eyes, the antennal scape below, two broad lines on the pronotum, the scutellums, the metanotal area, the metanotum except on the furrow, the first abdominal segment, a broad oblique mark extending almost to the apex, the apex of the third segment narrowly, of the fourth more broadly, and of the fifth still more broadly, yellow. The basal five and the apical two joints of the flagellum, brownish rufous below; wings hyaline, the apex broadly smoky, tinged with violaceous, the nervures and stigma black. Legs black; the four anterior tibiae and tarsi in front and the posterior tibiae all round to shortly beyond the middle, yellow. Female. Length 8 mm. Chinandega, Nicaragua.

Clypeus flat, its apex transverse, the sides almost straight. Metanotal area smooth, furrowed down the middle. Head and thorax closely and strongly punctured. Cheeks thickly covered with long pale golden hair. Pleural spine moderately large, black, pale in the centre. Pygidial area irregularly, transversely reticulated in the middle, roundly narrowed at the base and still more narrowed at the apex, the sides curved; epipygial incision fully three times longer than wide, not extending back to the middle. Allied to *C. truncatus* Cam.

3056 ***Cerceris cosmiocephala* sp. nov.**

Black, face, clypeus, lower half of inner orbits broadly, mandibles except at the apex, two irregular transverse marks behind the ocelli, a mark dilated backwards above on the upper outer orbits, two lines on the pronotum, two irregular marks on the base of the scutellum, two smaller marks on the sides of the post-scutellum, a broad line on the apex of the first abdominal segment, and the following segments except narrowly at the base, lemon-yellow. Scape of antennae yellow below; the basal joints of antennae entirely and the others below, rufous. Four front tibiae and tarsi almost entirely, their femora broadly below and the hind tibiae below, yellow, the hind tarsi rufous, the black on the hind tibiae being also tinged with rufous. Wings hyaline, strongly tinged with smoky fulvous, the stigma and nervures fulvous. Metanotal area smooth, shining, deeply furrowed down the middle, the sides with a narrow border of stout oblique striae. Male. Length 9 mm. San Marcos, Nicaragua.

Clypeus roundly convex, clearly separated laterally, its apex broadly rounded, the sides being also rounded. Thorax strongly and closely punctured. Upper part of mesopleurae roundly dilated and clearly separated from the lower; there is no spine on the lower part. Pygidium broad compared with the length, sparsely and strongly punctured, the apex transverse; the incision shallow, broad, the sides forming stout rufous teeth; the part behind it is flat and separated from the larger basal part. Allied to *C. tepaneca*.

1521 ***Polybia spilonota* sp. nov.**

Black, the sides of the clypeus broadly, its apex more narrowly, a mark, dilated in the middle, below the middle of the inner orbits; a small mark on the base of the mandibles above, a narrow line around the apex of the pronotum, a mark on the upper half of the mesonotum at the base, longish, irregular, narrowed below and curved backwards at the apex, following the curve of the suture, a mark, wider than long, on the apical half of the mesonotum, its sides at the base prolonged into narrow lines, as long as the mark itself, the scutellums, the greater part of the metanotum, the mark roundly narrowed, laterally at the base, the sides broadly rounded, a broad line on the apex of the first abdominal segments and narrower lines on the apices of the other segments, yellow; the marks on the mesonotum and scutellum with a distinct orange tinge; tarsi brownish beneath; wings hyaline, the costal cellule slightly, the radial distinctly, fuscous violaceous, the stigma dark testaceous. Worker. Length 10 mm. San Marcos, Nicaragua.

Apex of clypeus broadly rounded, the centre slightly projecting into a short, blunt tooth, transverse in the centre, the sides obliquely narrowed. Mandibular teeth rufous. Eyes almost touching the base of the mandibles. A narrow furrow on the front below the ocelli; another above the antennae. A short, distinct furrow on the sides of the mesonotum opposite the tegulae, an indistinct one on the centre at the base and a much more distinct one down the centre of the scutellum. Abdominal petiole longish, fully as long as the second segment, its apex distinctly dilated. Second cubital cellule much narrowed above, as wide there as the space bounded by the two recurrent nervures.

3047 ***Paratiphia iridipennis* sp. nov.**

Black, densely covered with white hair, the hair on the abdomen tinged with fulvous; labrum and clypeus white; legs thickly covered with white hair; tarsal spines white; wings almost hyaline to the transverse median nervure, beyond that fuscous violaceous, highly iridescent. Male. Length 7 mm. San Marcos, Nicaragua.

Clypeus strongly, but not closely punctured and covered with long white hair. Head strongly and closely punctured, except at the ocelli, thickly covered with long white hair. Mandibles rugose at the base. Basal slope of prothorax smooth, sharply keeled above, behind the keel is a furrow which bears some stout keels; the apex is smooth, the middle closely punctured. Mesonotum shining, closely punctured, the scutellum

more closely and the postscutellum still more closely and finely punctured. In the centre of the base of the metanotum are two areae, longer than wide, divided by a stout keel, the outer edges at the apex rounded and with two irregular oblique keels near the base; next to this is a larger area, which, at the outer basal part, is continuous with a longer, narrower, bounding area, with two stout keels at the spiracles, above the apical slope is a row of deep areae, longer than broad. Propleurae punctured, but not strongly or closely, the apex smooth. Metapleurae smooth at the base, the rest stoutly obliquely striated. Abdomen closely punctured, the segments fringed with pale golden hair. Pygidium strongly punctured, smooth down the centre; epipygium brownish, raised above over the pygidium. The oblique depression on the second ventral segment is bordered above by two curved furrows which unite in the centre. The apical abscissa of the radius is acutely angled below the middle; the second abscissa of the cubitus distinctly shorter than the basal; both the recurrent nervures are received shortly beyond the middle; nervures and stigma black.

3048 *Tiphia testaceipalpis* sp. nov.

Black, the underside and apex of flagellum of antennae rufo-testaceous; mandibles broadly rufous at the apex; palpi testaceous; fore tarsi and tibiae in front rufous; metanotum with two keels; wings hyaline, the nervures black. Male. Length 6.5 mm. San Marcos, Nicaragua.

Head closely punctured, densely covered with silvery hair, the cheeks, face, and clypeus much more densely with long white hair and white pubescence. Pronotum sharply keeled at the base, the apex smooth, the middle closely punctured. Mesonotum with large scattered punctures, the sides bordered by a curved foveate furrow. Scutellum punctured, except in the middle at the base. The centre of the metanotum between the keels smooth, bare, shining, the top and apex of the meta-pleurae strongly, irregularly striated, the striae clearly separated. First segment of abdomen smooth, except for a band of large irregular punctures on the base of the dilated apex; the apex near the end has a transverse, deep, crenulated furrow; there is a broader, more curved, similar furrow on the base of the second. The apical half of the abdomen, as usual, is more thickly haired and more closely and strongly punctured. Comes near to *T. carinata* Cam. and *T. rugosa* Cam. but is much smaller and has only two keels on the metanotum. It is the smallest species known from Central America.

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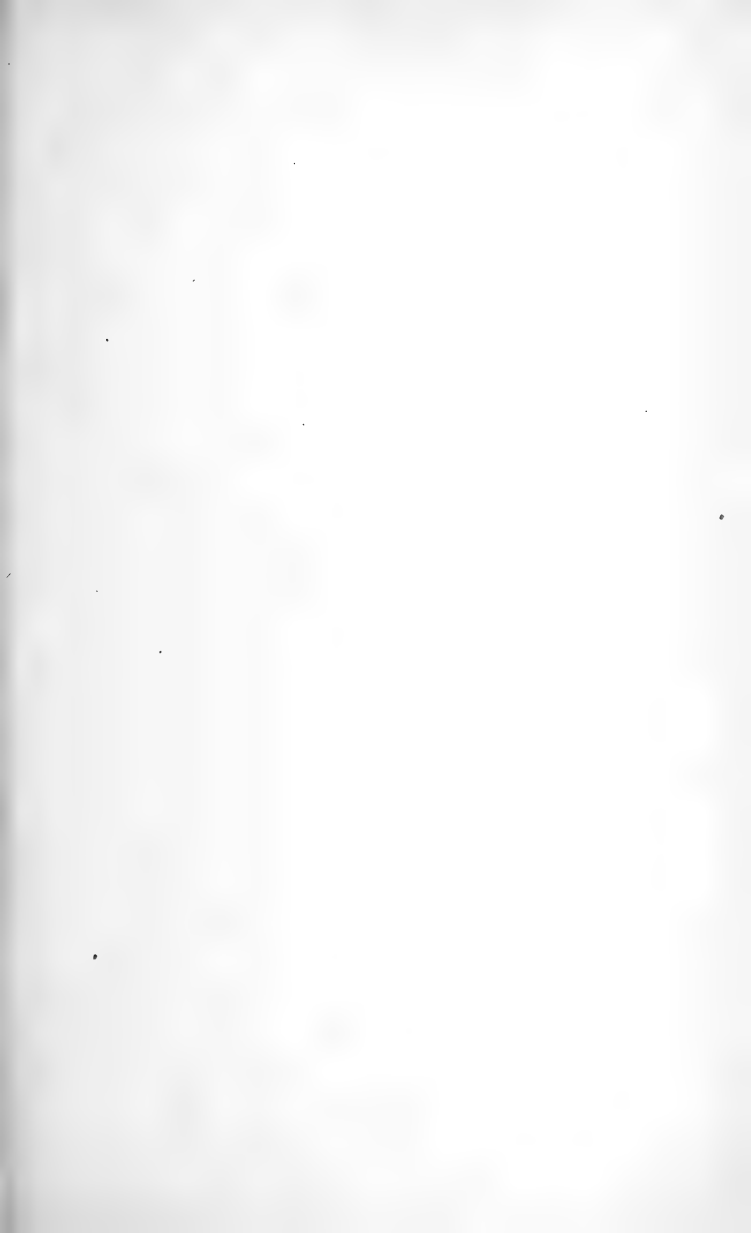
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INVERTEBRATA PACIFICA

EDITED BY C. F. BAKER, Estación Agronómica, Santiago de las Vegas, Cuba.

ORTHOPTERA

SECOND REPORT ON PACIFIC SLOPE ORTHOPTERA.

C. F. BAKER.

Through the kindness of Messrs. Rehn, Morse, and Bruner in the matter of determinations it becomes possible to present an additional list of the western collections. There are included descriptions of several new species by Mr. Rehn, and some by myself.

The second two decades of Orthoptera in this series have been issued. These include all the species starred in this list, together with *Camnula pellucida*, *Melanoplus nanus*, *Melanoplus devastator* (No. 9), and *Cacopteris inermis* of the first list.

FORFICULIDAE.

1292 **Apterygida linearis** (Esch.)

Occurring commonly in sweepings made at San Marcos, Nicaragua.
Det. Rehn.

2581 **Ancistrogaster** sp.

Represented only by immature forms but common among herbaceous vegetation at San Marcos, Nicaragua. Det. Rehn.

2582 **Psalis americana** (Palisot).

Occasional at Managua, Nicaragua. Det. Rehn

BLATTIDAE.

1534 **Archimandrita marmorata** (Stoll).

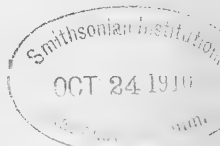
This huge cockroach occurs frequently under the bark of rotten standing stubs at San Marcos, Nicaragua. Det. Rehn.

1535 **Periplaneta australasiae** Fabr.

Common at San Marcos, Nicaragua. Det. Rehn.

2583 **Anaplecta Jansoni** S. & Z.

Occasional at San Marcos, Nicaragua. Det. Rehn.



1294 *Anaplecta fallax* Sauss.

Taken at Managua and Chinandega in Nicaragua. Det. Rehn.

2627 *Blattella zapoteca* Sauss.

A specimen taken at Chinandega is questionably referred to this species by Mr. Rehn.

2996 *Ischnoptera consobrina* Sauss. ?

Occasional at Claremont, California. Det. Rehn.

MANTIDAE.

1536 *Stagmatoptera typhon* Rehn n. sp.

Specimens of this huge mantid were not infrequently seen at San Marcos, Nicaragua. Mr. Rehn has published the description of this species in Canadian Entomologist.

1833 *Stagmomantis nahua* Sauss.

Occasional at San Marcos, Nicaragua. Det. Rehn.

2584 *Stagmomantis tolteca* Sauss.

Occasional at Chinandega, Nicaragua. Det. Rehn.

2585 *Stagmomantis carolina* (L.)

Taken occasionally at Claremont, California. Det. Rehn.

2599 *Litaneutria minor* (Sc.) or *obscurus* (Sc.)

At Claremont and in the mountains near Claremont, California. Det. Rehn.

PHASMIDAE.

3005 *Parabacillus coloradus* (Scudd.)

Occasional at Elsinore, California. Det. Rehn.

1869 *Bostra jugalis* Rehn n. sp.

"Types: Male and female. Chinandega, Nicaragua. Coll. C. F. Baker. Acad. Nat. Sci. Phila.

More closely related to *B. turgida* (West.) and *B. incompta* Rehn than to any other species of the genus, but the resemblance is rather superficial and *jugalis* is really unique in the genus. The more important diagnostic characters of the male are the long cerci, which are sharply curved basally and depressed apically, and the bi-tuberculate ninth dorsal abdominal segment. The female differs from the female of *B. turgida* (the only species of which the female was known) in the longer median and abdominal segments.

Male: Size medium; form elongate; surface unarmed. Head elongate, the anterior width greater than that of the posterior portion, which latter is provided with two rather small tubercles placed on the median line; in-

terocular region unarmed; eyes subglobose, somewhat flattened; antennae about two-thirds the length of the body, filiform, the basal joint somewhat depressed, the second joint subcylindrical and two-thirds the length of the first. Pronotum almost equal to the head in length, rather narrow, the median width slightly greater than the anterior or posterior width; anterior and posterior margins rotundato-emarginate, the posterior very decidedly concave; transverse median depression shallow. Mesonotum slightly shorter than the anterior femora, narrow cylindrical; expanded posteriorly. Metanotum (with median segment) slightly less than two-thirds the length of the mesonotum; median segment elongate, constituting slightly less than half the length of the metanotum. Abdomen about equal to the remainder of the body, segments all longitudinal; first to fifth subequal; sixth slightly shorter than the fifth; seventh somewhat expanded; eighth slightly longer than the seventh, compressed lateral flaps large, bent under and meeting in the median line; ninth segment very slightly longer than the eighth (on the median line), narrow basally, median portion bullate, apical margin with the median section truncate, the lateral portions developed into very distinct, finger-like, slightly diverging processes, median line of the segments lightly carinate; cerci long, exceeding the ninth abdominal segment in length, the basal half strongly curved, the remainder straight and depressed; subgenital opercule not very prominent, reaching to the middle of the eight dorsal segment, posterior portion developed into a blunt curved process. Anterior femora slightly longer than the mesonotum, multicarinate, basal flexure slight; tibiae exceeding the femora by almost one-fourth of the latter; metatarsi slightly longer than the remaining joints of the tarsi. Median femora considerably shorter than the mesonotum, more robust than the anterior femora, the inferior median line bearing several blunt teeth apically; tibiae slightly longer than the femora and with an extremely slight expansion in the basal portion; metatarsi very slightly shorter than the remaining tarsal joints. Posterior femora equal to the first three and half of the fourth basal abdominal segments, median line as in the median femora; tibiae considerably exceeding the femora in length; metatarsi slightly longer than the remaining tarsal joints.

General color wood-brown becoming greenish-gray on the head, pronotum and mesonotum; infra-ocular portion of head, a lateral line on the prothorax and a line on the lateral portions of the seventh and eighth abdominal segments cream-white; median and posterior tibiae alternately ringed with ochraceous and umber.

Female: Size rather large; form elongate; surface armed with low tubercles on the thorax. Head moderately long, slightly constricted posteriorly; occiput bearing a pair of low conical tubercles placed immediately back of the interocular section, and another pair of very low and subobsolete protuberances on the posterior margin of the head; eyes subglobose; antennae with the basal joint strongly depressed, slightly bisulcate above. Pronotum with the margins straight. Mesonotum distinctly

longer than the anterior femora, slightly constricted anteriorly, tubercles for the greater part roughly grouped into four lines, two on each side; mesopleura with a distinct row of tubercles; mesosternum unarmed. Metanotum (with median segment) slightly more than two-thirds the length of the mesonotum, tubercles in two lines, one on each side; metapleura with a single line of tubercles; median segment longitudinal, slightly more than two-fifths of the entire metanotum, anterior margin arcuate. Abdomen considerably longer than the remainder of the body; all segments longitudinal; first four abdominal segments increasing in length until the maximum is reached in the fourth segment, which is equalled by the fifth; sixth segment about equal to the second; seventh segment about two-thirds the length of the sixth; eighth two-thirds the length of the seventh and broader than the latter which is compressed; ninth segment about equal to the seventh in length, distinctly carinate and obscurely tuberculate, apex rotundate and slightly exposing the broadly triangular tip of the supra-anal plate; cerci about half the length of the ninth dorsal segment, simple, fusiform, depressed; subgenital opercle elongate, hastate, exceeding the apex of the ninth dorsal segment by considerably more than the length of that segment, median line carinate, apex acute. Anterior femora robust, basal flexure marked; tibiae slightly exceeding the femora in length. Median femora about equal to the metanotum in length, median carina armed as in the male; tibiae slightly longer than the femora; metatarsi distinctly shorter than the remaining tarsal joints. Posterior femora reaching the apex of the third abdominal segment, median carina armed as in the male; tibiae slightly longer than the femora, inferior median carina sharp and pronounced; metatarsi about equal to the remaining tarsal joints.

General color probably grass-green in life, now greenish yellow, becoming brownish in the abdomen and posterior limbs.

MEASUREMENTS.

Total length *	87.5 mm.	104.5 mm.
Length of head	4. mm.	5. mm.
Length of pronotum	3.2 mm.	4.8 mm.
Length of mesonotum	23. mm.	25.8 mm.
Length of metanotum (including median segment)	16.2 mm.	18.2 mm.
Length of median segment	7. mm.	8. mm.
Length of abdomen	44. mm.	58. mm.
Length of anterior femora	22.8 mm.	24. mm.
Length of anterior tibiae	26.8 mm.	25. mm.
Length of median femora	20.5 mm.	18.5 mm.
Length of posterior femora	22. mm.	22. mm.
Length of subgenital opercle		14.5 mm.

*The body is considerably bent so that this measurement taken in a straight line does not represent the actual length."

ACRIDIDAE.

2587 *Paratettix mexicanus* Sauss.

Occasional at Chinandega, Nicaragua. Det. Rehn. Rehn also refers to this species my No. 2998 from the mountains near Claremont, California.

3000 *Paratettix mexicanus* Sauss. var. *abritus* Hanck.

Taken with the No. 2998 above mentioned, on the muddy bank of a stream in a narrow canon in the mountains near Claremont, California. Det. Rehn.

1854 *Inusia obscura* (Thunb.) ?

Occasional at San Marcos, Nicaragua. Det. Bruner.

2618 *Achurum Sumichrasti* Sauss.

Taken at Granada, Nicaragua. Det. Rehn.

2588 *Napaia gracilis* McN.

First seen at Claremont, California. During the Fall found to be abundant locally in the mountains near Claremont. Det. Rehn.

1284 *Orphulella punctata* DeG.

Taken commonly at San Marcos and Managua in Nicaragua. Det. Bruner.

*1554 *Psoloessa maculipennis* Seudd.

Frequent at Claremont, California. Det. Rehn.

1553 *Psoloessa ferruginea* Seudd.

Occasional at Claremont, California. Det. Rehn.

1862 *Heliastus Sumichrasti* Sauss.

Occasional at San Marcos, Nicaragua. Det. Bruner.

2625 *Heliastus aridus* Bruner.

Occasional at Claremont, California. Det. Rehn.

*2753 *Heliastus Californicus* Thom.

Specimens taken at Claremont, California are similar to specimens in the Pomona College collection apparently determined by Bruner. The species is so variable that scarcely two alike can be found. If this is true *Californicus*, then *aridus* is but a form of it.

1857 *Leprus intermedius* Sauss.

Rare at Claremont, California. Det. Bruner.

1287 *Lactista punctatus* Stal.

Occasional at San Marcos, Nicaragua. Det. Rehn.

777 *Lactista gibbosus* Sauss.

Occasional at Claremont, California. Det. Morse.

*1538 **Arphia hesperiphila** Rehn.

Common at Claremont, California. Det. Rehn.

300 **Arphia Behrensii** Sauss.

Occasional in Ormsby county, Nevada. Det. Rehn.

2621 **Chimarocephala pacifica** Thom.

Frequent at Claremont, California and in the nearby mountains. Det. Rehn.

1834 **Dracotettix plutonius** Bruner.

Occasional among the various desert shrubs on dry ground at Claremont, California. Very variable in color. Det. Rehn.

*775 **Derotmema saussureanum** Seudd.

This one of the most abundant species at Claremont, California. Det. Morse.

778 **Conozoa Behrensii** Sauss.

Frequent at Claremont, California. These specimens were determined by Morse. Rehn has determined a very different thing (No. 2589) as *C. Behrensii*.

788 **Conozoa wallula** Seudd.

Common at Claremont, California. Det. Rehn. Bruner has referred here a very different thing represented by Nos. 1861 and 1859, collected by me in Ormsby county, Nevada.

782 **Spharagemon venustum** Stal.

Frequent at Claremont, California. Det. Morse. Another lot of specimens collected (No. 783) are very pale in color.

786 **Trimerotropis Californica** Bruner.

Occasional at Claremont, California. Det. Morse. Varies from quite dark as in these specimens to ashy (No. 785).

*780 **Trimerotropis vinculata** Seudd.

Common at Claremont, California. Det. Morse. A very weak de-colored form is frequent.—No. 1858, determined by Bruner.

784 **Trimerotropis caeruleipennis** Bruner.

Occasional at Claremont, California. Det. Morse. But my specimens are scarcely separable from those determined as *vinculata*.

304 **Trimerotropis tessellata** McN.

Frequent in Ormsby county, Nevada. Det. Rehn.

1863 **Aidemona azteca** Sauss.

Taken at Chinandega and San Marcos in Nicaragua. Det. by Rehn and Bruner.

1540 **Oedaleonotus enigma** (Seudd.)

Since the publication of my first report I have found this species also at Claremont, California. Rehn.

1582 **Melanoplus affinis** Seudd. ?

One of the *Melanopli* common about Claremont, California. Rehn refers it to this species with a question.

1864 **Melanoplus Rileyanus** Seudd.

Occasional in the mountains near Claremont, California. Det. Bruner.

1865 **Melanoplus fuscipes** Seudd.

Found at Claremont, California, on plants of *Eriogonum fasciculatum*. Det. Bruner.

1866 **Melanoplus serianus** Seudd.

Specimens collected by me at Stanford University, California, have been referred to this species by Bruner.

1544 **Melanoplus diminutus** Seudd.

Frequent at Stanford University, California. Rehn has also referred to this species a very different thing which I found at Stanford University (No. 308) and which Morse had called *M. devastator* Seudd. But my No. 9 from Ormsby county, Nevada, and which Rehn has determined as *devastator*, is the same as No. 308.

309 **Melanoplus femur-rubrum** DeG.

Morse has referred here a common form found in Ormsby county, Nevada. Two lots were collected, the second under * No. 8.

1867 **Melanoplus differentialis** Thom.

Occasional at Claremont, California. Det. Bruner.

3427 **Melanoplus bivittatus** Say.

A form of this well known species is not uncommon in Ormsby county, Nevada.

1301 **Osmilia mexicana** Sauss.

Frequent at San Marcos, Nicaragua. Det. Rehn.

1855 **Taeniopoda obscura** Bruner.

Occasional at San Marcos, Nicaragua. Det. Bruner.

1868 **Schistocerca columbina** Thunb.

Occasional at San Marcos, Nicaragua. Det. Bruner.

*1545 **Schistocerca vaga** Seudd.

Common at Claremont, California. Det. Rehn.

LOCUSTIDAE.

1547 *Stilpnochlora marginella* Thunb.

Occasional at San Marcos, Nicaragua. Det. Rehn.

*1288 *Microcentrum laurifolium* (L.)

Common at Claremont, California, among the orange trees. Det. Rehn. My No. 1295 from Nicaragua Rehn also calls *laurifolium*, but they differ widely in wing proportions at least, and these are fairly constant in the two lots.

1546 *Paragenes conspersa* (Bruner).

Occasional at San Marcos, Nicaragua. Det. Rehn.

2590 *Paragenes tessellata* (Sauss.)

Occasional at San Marcos, Nicaragua. Det. Rehn.

2593 *Conocephalus macropterus* Redt.

Occasional at Chinandega, Nicaragua. Det. Rehn.

1297 *Scudderia curvicauda* (DeG.)

Occasional at San Marcos, Nicaragua. Det. Rehn.

1549 *Scudderia mexicana* Sauss.

Taken at Chinandega, Nicaragua, and at Claremont, California, according to determinations by Rehn.

1548 *Scudderia furcifer* Scudd.

San Marcos, Nicaragua. Det. Rehn.

1299 *Scopiorus mucronatus* Sauss. & Piet.

Taken at San Marcos and Chinandega, Nicaragua. Det. Rehn.

1300 *Phlugis virens* (Thunb.)

Occasional at San Marcos and Chinandega, Nicaragua. Det. Rehn.

1971 *Xiphidium fasciatum* DeG.

Common at Managua, and taken also at Chinandega, Nicaragua. Det. Rehn.

789 *Xiphidium propinquum* Redt.

Frequent at San Marcos, Nicaragua. Det. Rehn. Morse has referred this with a question to *X. gossypii* Scudd.

2594 *Anabrus simplex* Hald.

Occasional in Ormsby county, Nevada. Det. Rehn.

3003 *Pristoc euthophilus marmoratus* Rehn n. sp

Rare at Claremont, California. Rehn has recently published the description of this species.

1552 **Ceuthophilus Californicus** Scudd.

Frequent at Claremont, California, under stones. Det. Rehn.

2595 **Tropizaspis Steindachneri** (Hermann).

Occasional at Claremont, California. Det. Rehn.

GRYLLIDAE.

790 **Stenopelmatus irregularis** Bruner.

Frequent at Stanford University, California. Det. Morse.

*1551 **Stenopelmatus oculatus** Scudd.

Frequent at Claremont, California. Det. Rehn.

1972 **Stenopelmatus Californicus** Br. ?

Immature forms doubtfully referred to this species by Rehn were found commonly under stones at Claremont, California.

*791 **Rhipipteryx Biolleyi** Sauss.

Occasionally taken in the sweep net at San Marcos, Nicaragua. Det. Morse.

3006 **Tridactylus terminalis** Scudd.

Occasional on the muddy lake shore at Elsinore, California. Det. Rehn.

*792 **Ellipes minuta** (Scudd.)

Common in sweepings made at Managua, Nicaragua and at Champerico, Guatemala. Det. Rehn and Morse.

2604 **Gryllus pennsylvanicus** Burm.

Frequent at Claremont, California. Det. Rehn.

2600 **Gryllus assimilis** Fabr.

Frequent under stones on Catalina Island, California. What are apparently the young of this species were found abundant under stones at Claremont, California.

2605 **Gryllus vocalis** Scudd.

Occasional at Elsinore, California. Det. Rehn.

3004 **Gryllus integer** Scudd.

Occasional at Elsinore, California. Det. Rehn.

2609 **Prosthacusta mexicana** Sauss. ?

Occasional at San Marcos, Nicaragua. Det. Rehn.

1970 **Ectatoderus borealis** Scudd.

Occasional at Claremont, California. Det. Rehn.

2608 **Ectatoderus aztecus** Sauss.

Taken at Acapulco, Mexico. Det. Rehn.

1973 *Anaxipha pulicaria* Burm.

Common at San Marcos, Nicaragua. Det. Rehn.

1290 *Cyrtoxipha azteca* Sauss.

Taken at Managua and San Marcos, Nicaragua. Det. Rehn.

2620 *Cyrtoxipha Smithii* Sauss.

Common at San Marcos and Chinandega, Nicaragua. Det. Rehn.

2615 *Cyrtoxipha granadensis* Rehn, n. sp.

"Type: Female; Granada, Nicaragua. Coll. C. F. Baker. Acad. Nat. Sci. Phila.

Allied to *C. macilentus* Saussure but differing in the slenderer and unarmed ovipositor and the slightly shorter metatarsi.

Size small; form elongate. Head with the interocular region broad and depressed, the occiput bearing a very blunt ridge; eyes large, moderately prominent, subreniform in outline; palpi with the terminal joint slender and not markedly infundibuliform; antennae exceeding the body in length. Pronotum subequal in width and rather cylindrical, slightly longer than broad; anterior margin with a slight median emargination, posterior bisinuate; lower margin of the lateral lobes broadly obtuse-angulate. Tegmina equalling the body in length, narrow; apex rather acute; dorsal field with the veins all distinctly longitudinal. Wings caudate, exceeding the tips of the tegmina by considerably more than half the length of the latter. Cerci slightly exceeding the ovipositor in length, tapering. Ovipositor slightly less than half the length of the posterior femora, arcuate, subequal in width, the usual shoulder on the superior margin very slight and both apical margins are unarmed; apex acute. Limbs slender. Posterior femora gradually and directly tapering to the apex; tibiae about equal to the femora in length, spines slender; metatarsi slightly less than twice as in long as the remaining tarsal joints.

General color pale glaucous green; eyes chocolate brown; ovipositor with the apical portion ferruginous.

MEASUREMENTS.

Total length	8.5 mm.
Length of pronotum	1.3 mm.
Length of tegmina	5.5 mm.
Length of wings	9. mm.
Length of posterior femora	5.8 mm.
Length of ovipositor	2.2 mm."

2602 *Xabea bipunctata* DeG.

Occasional at San Marcos, Nicaragua. Det. Rehn.

2607 *Paroecanthus aztecus* Sauss.

Taken at San Marcos and Chinandega, Nicaragua. Det. Rehn.

2617 **Oecanthus Californicus** Sauss.

Frequent at Claremont, California. Det. Rehn.

2616 **Oecanthus marcosensis** Baker n. sp.

Specimens collected at San Marcos, Nicaragua and of the same general habitus as *californicus*, had been doubtfully referred to that species by Rehn. No. 2617 he had determined as true *californicus*. But *marcosensi*, differs widely in the majority of the specific characters, coloration, form of body, structure of antennae, etc., though it is evidently a near relative. Type in my collection.

Length 18 mm. Color a faded brownish, darker on the posterior legs. The antennae are stout, the two basal joints brownish, and each with a slender, longitudinal, dark brown dash beneath; the flagellum is straw colored and with short white pubescence; joints 3 and 4, 6 to 10 inclusive, 12, and 16, are short and subequal; joints 5, 13, and 17, are slightly longer and subequal; joints 11, 14, 15, and 18 and succeeding joints, are about twice as long as the smallest joints and subequal in length. The maxillary palpi are about as long as the head, joints 3 and 4 subequal, joint 5 longer and most swollen in the apical half. Labial palpi small, the third joint longer than the first two together and but slightly swollen towards the normally rounded tip. Pronotum narrowed anteriorly, the sides neither strongly depressed nor much expanded; near the median line are three pairs of small longitudinal depressions; near the front margin on either side is a short semicircular depression, while posterior to these are a pair of long, curved, deep longitudinal depressions. The tegmina are 14 mm. long by 5.5 mm. wide at the widest place; on the reflexed portion are fourteen oblique veins. The wings reach to the tips of the tegmina. The cerci are rather stout, extending to the wing tips, and covered with rather long white hairs of varying lengths. The hind femora have three longitudinal series of short, oblique, straight brown dashes on the outer side, while both femora and tibiae are sprinkled with minute brown dots; the tibiae bear five pairs of large spines besides the numerous small teeth; the apex of hind tibiae and the hind tarsi are thickly covered with a short golden pubescence.

2613 **Oecanthus niveus** DeG.

Occasional in the mountains near Claremont, California. Det. Rehn.

1299 **Oecanthus varicornis** Wlk.

Taken at Champerico, Guatemala and San Marcos, Nicaragua. Det. Rehn.

1289 **Oecanthus nigricornis** Wlk.

Frequent at Stanford University, California. Det. Rehn.

1302 **Oecanthus Rileyi** Baker n. sp.

This new species is described from one male taken in the mountains near Claremont, California. Mr. Rehn had referred it to *Oecanthus*

lalipennis Riley, temporarily, as the most nearly related form. But this can scarcely be that species as the description will indicate. The type is in my collection.

Length 15 mm. Color, the faded yellow common to many species of *Oecanthus*. The anterior and middle femora are pale brown. The antennae are clear shining amber color; the two basal joints are brown and each has on the under side an ivory white area with a small round dark brown dot at center; the flagellum is very slender, about 16 mm. in length and very minutely and sparingly pubescent; joints 2 to 11 inclusive, of the antennae, and 14 and 15, are short and subequal in length; 12 and 13, and 16 and immediately succeeding joints, nearly twice as long as those in the first lot. Joints 3 and 4 of maxillary palpi equal; joint 5 as long as first three together and medially somewhat swollen. Basal joint of labial palpi small, second slightly more than twice as long, third as long as first two together and gradually enlarged to a truncate tip. Pronotum narrowed anteriorly, with two small slender curved longitudinal depressions laterally on disc; the sides are first strongly depressed and then expanded. The tegmina are 12 mm. long by 4.5 mm. wide at the widest place; the reflexed lateral portion has eleven oblique veins. The wings exceed the tegmina by 1 mm. The cerci attain the tip of the wings and are thickly pubescent with silvery white hairs. The hind tibiae bear five pairs of large spines besides the numerous small teeth.

3428 *Oecanthus Rehnii* Baker n. sp.

With No. 1302 I had placed a specimen taken at Stanford University, California, which was almost identical in general form. On examining it critically I am surprised to find that it differs in almost all the specific characters in use in the genus. The type will remain in my collection.

Length 14 mm. Color as in *rileyi*. Anterior and middle femora of the same color as the rest of the body but the hind femora are brownish. The antennae are quite stout, 22 mm. long, opaque, brown in color and covered with a tolerably dense minute pile; the articular nodes are white, producing a ringed appearance; the two basal joints are yellow; the first has beneath and within a heavy black longitudinal stripe, and a roundish black spot apically and outwardly; the second joint is almost covered beneath with a large black spot which is notched with yellow apically; joints 2, 3, 5 to 8, and 10 and 11, are short and subequal, joints 4 and 9 are once and a half as long, joints 12 and 13 are twice as long, 14 the same length as the first lot, while 15 and succeeding joints are again long and subequal. Palpi and thorax about as in *rileyi*. The tegmina are 10.5 mm. long by 4 mm. wide at the widest place; the reflexed lateral portions have twelve oblique veins. The wings exceed the tegmina by 1 mm. The cerci are as in *rileyi*. The hind tibiae bear six pairs of large spines besides the numerous small teeth. The apices of the hind tibiae and the hind tarsi are piceous.

ADDENDUM.

2610 **Heterocoilis Bakeri** Rehn n. sp.

"Type: Female; San Marcos, Nicaragua. Coll. C. F. Baker. Acad. Nat. Sci. Phila.

Allied to *H Smithianus* Saussure but differing in the shape of the pronotum, the much shorter tegmina and the fewer veins in the dorsal field of the same.

Size medium; form moderately robust. Head broad, the interocular region distinctly flattened and considerably deflected; vertex narrower than the width of the basal joint of the antennae and bearing a slight longitudinal sulcation; eye moderately prominent, pyriform in outline and with the greatest width superior; palpi with the last joint expanded and infundibuliform, equal to the third joint in length; antennae rather short, slightly exceeding the body in length. Pronotum slightly broader than long, quadrate, anterior margin truncate, posterior very slightly arcuate; lateral lobes shallow, the lower margin and angles rounded, the posterior angle with an additional internal ridge. Tegmina considerably shorter than the abdomen, apex evenly rounded; dorsal field with six major and two accessory veins; lateral field with the mediastine vein bearing eighth rami. Wings aborted. Cerci long, equal to the ovipositor in length, rather stout, tapering. Ovipositor shorter than the posterior femora, straight, narrow, the apex with the outer valves distinctly denticulate, the inner valves very weakly denticulate. Limbs robust. Anterior tibiae with the aperture of the tympanum sub-elliptical. Median limbs slightly slenderer than the anterior pair. Posterior femora robust, distal extremity not expanded; tibiae slightly shorter than the femora, marginal spines five in number, the margins very distinctly dentate, apical spurs long and slender; metatarsi about equal to the last tarsal joint in length, and with the second tarsal joint dentate on the superior margins.

General color hazel, the abdomenumber; antennae with the two basal joints and the apical half of the same general tint, the intermediate portion black; margins of the pronotum and an obscure bar at the margins of the disk blackish; tegmina wood-brown, the humeral vein black; posterior tibiae with the proximal portion and that adjacent to the base of each spur blackish.

MEASUREMENTS.

Total length	20. mm.
Length of pronotum	3. mm.
Width of pronotum	3.5 mm.
Length of tegmina	8. mm.
Length of posterior femora.	9.2 mm.
Length of ovipositor.....	6.8 mm.

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INVERTEBRATA PACIFICA

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NEUROPTEROID INSECTS

NOTES ON NEUROPTEROID INSECTS OF
THE PACIFIC
COAST OF NORTH AMERICA WITH DESCRIPTIONS
OF NEW SPECIES BY NATHAN BANKS.

C. F. BAKER.

Through the kindness of Dr. Calvert and Mr. Banks I am able now to present the following preliminary report on the collections of Neuropteroid Insects brought together by me during my stay on the Pacific coast.

EPHEMERIDA

3122 *Callibaetis undata* Piet.

Occasional at Claremont, California. Det. Banks.

2241 *Cleon* sp.

Taken in the mountains near Claremont, California. Det. Banks.

2242 *Heptagenia* n. sp.

A common form in the mountains near Claremont, California, in the Springtime, dancing in the sunbeams where they break through the thick vegetation of the deep rich gulches.

ODONATA

1549 *Hetaerina americana* Fab. race *californica* Hag.

Occasional at Claremont, California. Det. Calvert.

- 1255 and 565 *Ischnura perparva* Selys.

Common about Lagunita at Stanford University, California. Det. Calvert.

- 1550 *Ischnura ramburi* Selys var. *credula* Hag.

Occasional at Chinandega, Nicaragua. Det. Calvert.

- 1579 *Leptobasis vacillans* Selys.

Taken at Granada, Nicaragua, and also at Chinandega. Det. Calvert and Banks.

- 1256 *Ceratura capreola* Hag.

Several specimens were taken at Managua, Nicaragua. Det. Calvert.

- 586 and 566 *Enallagma carunculatum* Morse.

Common about Lagunita at Stanford University, California. Det. Calvert.

- 3419 *Enallagma calverti* Morse.

Occasional in Ormsby county, Nevada. Det. Calvert.

- 580 and 1260 *Argia puella* Hag.

Frequent at Chinandega, Nicaragua. Det. Calvert and Banks.

- 1547 *Argia vivida* Hag.

Common at Claremont, California. Det. Calvert.

- 587 *Lestes stulta* Hag.

Abundant about Lagunita at Stanford University, California. Det. Calvert and Banks.

- 3624 *Amphiagrion saucium* Burm. race *abbreviatum* Selys.

A large series taken at Pine Lake in Southern California by Mr. James Johnson. Det. Calvert.

- 1261 *Neoneura amelia* Calvert.

Occasional at Chinandega, Nicaragua. Det. Calvert.

- 1251 *Sympetrum pallipes* Hag.

Occasional at Stanford University, California. Det. Calvert.

- 1252 *Sympetrum illotum* Hag.

Occasional at Stanford University, California. Det. Calvert.

- 1546 *Libellula saturata* Uhler.

Common about Lagunita at Stanford University, California, and at Claremont. Det. Calvert.

- 584 *Mesothemis corrupta* Hag.

Frequent at Stanford University, California. Det. Calvert and Banks.

- 1253 *Trithemis funerea* Hag.

Occasional at Stanford University, California. Det. Calvert.

1545 **Paltothemis lineatipes** Karsch.

Occasional at Claremont, California. "Not hitherto been found in California, although it is known from Arizona and Texas. It was originally described from Brazil and subsequently recorded from Mexico and Venezuela". (Calvert).

1544 **Tramea lacerata** Hag.

Occasional at Claremont, California. Det. Calvert.

1543 **Aeschna multicolor** Hag.

Frequent at Claremont, California, and in Ormsby county, Nevada. Det. Calvert.

PLECOPTERA

2221 **Perla californica** Banks n. sp.

"Head brown, pale reddish yellow between ocelli and on the clypeus; antennae pale brown; prothorax brown, with a trace of paler median line, rest of thorax dark brown, with a pale median stripe; abdomen pale brown; tibiae paler, with a blackish band on base; setae yellowish brown. Wings nearly hyaline, venation pale brownish; ventral plate of female pale, with a prominent, rounded blackish spot each side. Pronotum plainly broader than long, anterior angles acute, posterior ones slightly rounded. Structure similar to *P. lycorias*. Length 30 mm. Claremont, California.

Readily separated from its allies by the two black spots on ventral plate."

3395 **Nemoura depressa** Banks.

Taken at light in Claremont, California. Det. Banks.

3397 and 3398 **Tinodes consueta** McLach.

Occasional at Claremont, California. Det. Banks.

3115 **Sialis infumata** Newm.

Two specimens taken at Claremont, California. Det. Banks.

ISOPTERA

112 **Termopsis angusticollis** Wlk.

Workers and winged males common in old logs at Claremont, California, and in Ormsby county, Nevada. Det. Banks.

CORRODENTIA

2 **Elipsocus** n. sp.?

Taken in great numbers from evergreen oaks very early in Spring at Stanford University, California. Det. Banks.

- 3 **Caecilius** sp. perhaps *aurantiacus*.
Occasional at Stanford University, California. Det. Banks.
- 3128 **Caecilius** sp.
Frequent on oaks at Claremont, California. Det. Banks.
- 3125 **Psocus** sp.
Occasional at Claremont, California. Det. Banks.
- 3130 **Psocus californicus** Banks.
Occasional at Claremont, California, but more common in the nearby mountains. Det. Banks.
- 3127 **Peripsocus californicus** Banks.
Occasional at Stanford University, California. Det. Banks.

NEUROPTERA S. STR.

All of the species cited under this head have been determined by Mr. Banks.

- 573 **Raphidia oblita** Hag.
Common at Stanford University, California.
- 8 **Raphidia bicolor** Alb.
Common in Ormsby county, Nevada.
- 2222 **Raphidia adnixa** Hag.
Common in Ormsby county, Nevada. Found also at Stanford University, California.
- 2126 **Raphidia occulta** Banks.
Common at Claremont California and in the nearby mountains.
- 3426 **Mantispa brevicollis** Banks.
Taken in Ormsby county, Nevada.
- 574 **Mantispa viridis** Wlk.
Occasional at Granada, Nicaragua.
- 7 **Chrysopa fraterna** Banks.
Common in Ormsby county, Nevada.
- 4 **Chrysopa californica** Coq.
Common in Ormsby county, Nevada and at Stanford University, California.
- 3117 **Chrysopa externa** Hag.
Common at Claremont, California, and in the nearby mountains.
- 3120 **Chrysopa bimaculata** McClendon.
Occasional at Chinandega, Nicaragua.

3402 **Chrysopa rufilabris** Burm.

Taken at Elsinore, San Bernardino county, California.

3392 to 3394 **Chrysopa coloradensis** Banks.

Collected in Ormsby county, Nevada and also in the mountains near Claremont, California.

3399 **Eremochrysa fraterna** Banks.

Taken at Pine Lake, Southern California, by James D. Johnson, a former student of mine.

11 **Brachynemurus peregrinus** Hag.

Common in Ormsby county, Nevada.

10 **Brachynemurus ferox** Walk.

Frequent in Ormsby county, Nevada.

2232 **Brachynemurus longipalpis** Hag.

Occasional at Claremont, California.

2230 **Brachynemurus Sackeni** Hag.

Occasional at Claremont, California.

2233 **Brachynemurus papago** Currie.

Occasional at Claremont, California.

576 **Ascalaphus tuberculatus** Banks.

Frequent near the Indian pueblo of San Marcos in Western Nicaragua.

3405 **Polystoechotes punctatus** Fabr.

Mr. Culbertson, a former student of mine, took several specimens of this species at Three Rivers, California.

4035 **Berotha occidentalis** Banks n. sp.

"Face yellowish; vertex brown; antennae pale yellowish; thorax brown, rather densely clothed with brown bristles; abdomen pale brown, more yellowish on the base, legs very pale, clothed with gray hair and black bristles; wings tinted with brown, venation brown, there are many scattered round brown spots, each centered upon a vein. Along the costal area are several large dark brown spots, and the pterostigma quite dark brown; the apical margin is brown interrupted with white, gradate veinlets and the basal cross veinlets heavily dark brown. Hind wings hyaline, pterostigma brownish, and the cross vein below it margined with brown. The wings are of the usual shape, but the outer margin is evenly and deeply concave, not all sinuate; there are five branches of the radial sector, and the latter is connected to the radius by a cross vein near the middle of the wings. The male has at the tip of the abdomen a bristly style on each side. Length to tip of wings 12 mm.

Ormsby county, Nevada, July, Baker, and also at Phoenix, Arizona (another collector)."

3422 **Hemerobius coloradensis** Banks.

Occasional in Ormsby county, Nevada.

3423 **Hemerobius pacificus** Banks.

Occasional in Ormsby county, Nevada.

3424 **Hemerobius californicus** Banks.

Taken at Stanford University, California.

2336 **Hemerobius** n. sp.

Taken at Granada, Nicaragua.

2223 **Megalomus minor** Banks n. sp.

"Head pale yellowish, vertex with a dark median stripe. Antennae pale, rather darker beyond the middle, palpi pale yellowish. Thorax and abdomen dark brown; legs pale yellowish. Wings hyaline, venation pale, marked with brown, the longitudinal veins and costal veinlets interruptedly brown and yellowish; the gradate series nearly black and a black spot at anal angle, and a smaller one on cubitus toward the base; margin with alternate brown and white patches. Wings of usual shape; venation not as dense as in *M. moestus* and *M. latus*: five or six sectors; the first gradate series is very regular; the outer series but little curved. Length 6 mm.

Two specimens from San Marcos, Nicaragua, and one from Ormsby county, Nevada (Baker). Differs from *M. moestus* and *M. latus* in the smaller size, the dark stripe on vertex, and the less dense venation. *M. pictus* Hagen from Mexico is unknown to me, but is said to have the basal joints of the antennae black, which is not the case in the other three species."

3124 **Symphorobius angustus** Banks.

Occasional at Claremont, California.

3123 **Micromus variolosus** Hag.

Taken at Claremont, Los Angeles county, California.

3421 **Micromus montanus** Hag.

Occasional in Ormsby county, Nevada.

3403 **Maracandula bellula** Banks.

Collected for me at Three Rivers, California, by Mr. Culbertson.

575 **Myrmeleon rusticus** Hag.

Frequent at Granada, Nicaragua.

2228 **Myrmeleon distans** Banks.

Occasional at Claremont, California.

12 **Myrmeleon immaculatus** DeG. var **coloradensis** Banks.

Occasional in Ormsby county, Nevada.

MECOPTERA

583 **Bittacus apterus** McLachlan.

Frequent about Lagunita at Stanford University, California.

TRICHOPTERA

2235 **Leptocella** sp.

Occasional at Chinandega, Nicaragua.

577 **Chimarra** sp.

Taken at Chinandega, Nicaragua.

2237 **Rhyacophila coloradensis** Bank.

Occasional in the mountains near Claremont, California.

2234 **Hydropsyche** sp.

Taken at Chinandega, Nicaragua.

578 **Hydropsyche** sp.

Taken at Chinandega, Nicaragua.

3420 **Platyphylax** n. sp.

Occasional in Ormsby county, Nevada.

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INVERTEBRATA PACIFICA

Edited by C. F. Baker, Estación Agronómica, Santiago de las Vegas, Cuba.

HYMENOPTERA

NEW WESTERN MUTILLIDAE, — I.

By C. F. BAKER.

Large collections of Mutillidae made during several years residence in the Far West are now being worked up with some most interesting results. In a series of preliminary papers now ready for publication, descriptions of the new species will be given, and these will be followed eventually by a complete annotated list.

Genus *Odontophotopsis* Viereck.

Synopsis of the New Species Described.

- A. Flagellum piceous.
 - B. Ocelli small, close together, and set in a black area; abdomen thinly haired *cookii*.
 - BB. Ocelli large, well separated, and set in a concolorous vertex; abdomen very heavily haired; the only species having transverso-median nervure in line with basal *annulatus*.
- AA. Flagellum honey yellow or testaceous.
 - B. Long hairs of abdomen largely whitish, and numerous *mellicornis*.
 - BB. Long hairs of abdomen golden, and sparse.
 - C. Wings hyaline *viereckii*.
 - CC. Wings pale fuliginous *ocellatus*.

4039 *Odontophotopsis cookii* n. sp.

Length 10.5 mm. Castaneous, with white and pale golden pubescence. Viewed from the side the head is rather broadly rounded below the eyes; viewed from above it is broadly semicircularly rounded behind. Vertex minutely sparsely punctured and with few long dark brown hairs; occiput fringed with long yellowish hairs; below with white plumose hairs which are confined to the sides of the gular region. Ocelli small and very close together, the two posterior twice as distant from the

eyes as from each other; space between and including the ocelli black. The scape and funicle joint of antennae honey yellow, the former coarsely punctate and pubescent with longish yellowish hairs; flagellum piceous and covered with a dense short white tomentum; first joint of flagellum three-fourths of the length of the second. Mandibles with comparatively few yellowish and brown hairs, with an emargination on the lower border which is subtended by an obtuse tooth; the tip is black and bidentate. The maxillary palpi have articles II and III of equal length, IV and V of equal length and a little shorter. Thorax white pubescent except above and in front where the hairs are yellowish and brown. Sutures of pronotum without plumose hairs. Mesonotum shining and with very large and close punctures, becoming rugosely punctured on the sides; with two rather distant, distinct, longitudinal grooves on either side, but these do not reach the anterior margin. Scutellum opaque, coarsely rugose. Metanotum shining, very coarsely reticulated, the meshes of the reticulum subequal except for two unsymmetrical long narrow ones in the middle above. Mesosternum rugosopunctate and armed with two short teeth near the median line. Legs honey yellow, a shade darker on apices of hind femora and tarsi and on mid and hind tibiae. Tegulae honey yellow. Fore wings with the apical third pale smoky; nervures dark, stigma piceous, apex of marginal cell obtusely pointed; first recurrent nervure entering second submarginal cell before the middle of its lower margin; transverso-median nervure joining the externo-median in front of the basal.

Abdomen shining, and rather densely clothed with white, yellowish, and brown hairs. The length of first segment viewed from above is less than twice its breadth at apex, the sides are not straight, for apically it is swollen to almost nodose, though it is not as strongly constricted at juncture with second as in some other species; basally this segment is rugosopunctate but on the nodose portion very sparsely and remotely punctate; near its apex are a few plumose hairs; the median ventral ridge is not prominent and is bisinuate. Pubescence on first and second segments thick and whitish above and below; the apical margins of segments II to V are provided with dense rows of yellowish plumose hairs; segments III and following are finely transversely aciculate, and finely punctate apically. The last dorsal segment is opaque, thickly finely punctured, nearly nude, and with tufts of golden hairs at apical angles. Second segment with the usual felt lines and third segment with the usual speculum.

In Viereck's synopsis this species would fall into the *concolor* of Cresson, but differs widely from *mellicornis* which also runs to the same species. The type was taken at Claremont, California. It is named for Prof. A. J. Cook, one of the oldest American entomologists, who is now living at Claremont.

4040 ***Odontophotopsis annulatus*** n. sp.

Length 8 mm. Castaneous with whitish and golden pubescence which is especially dense on the posterior half of the abdomen. Genae rather

broad behind the eyes, but head subtriangular, viewed laterally. Viewed from above the head is very broadly semicircularly rounded behind. Vertex smooth and shining with very few subobsolete punctures, and thinly clothed with yellowish hairs which are mostly directed cephalad; the two hind ocelli are much nearer to each other than to the eyes. Genae coarsely punctured and with the occipital margin bearing many long yellowish hairs and some short white ones. Gular region with a patch of long white plumose hairs. Of the articles of maxillary palpi, II and III are subequal in length, IV and V are subequal and three-fourths the length of III; all the articles are compressed and expanded on the inner margin, the second very much the most strongly. Scape and funicular joint of antennae honey yellow, the former coarsely punctured and covered with whitish hairs of varying lengths; flagellum piceous, covered with fine white down, the first article three-fourths the length of the second. The mandibles are clothed with golden hairs and present the usual emargination below, subtended by a small blunt tooth; tips black and strongly bidentate, with indication of several smaller teeth within.

Thorax and legs rather conspicuously and thickly long white pubescent, the hairs above and in front faintly yellowish. Plumose hairs unusually abundant, occurring in lines and patches along the sutures of the thorax, sparingly on the surface of the metanotum, on the coxae, and around the apical borders of first five abdominal segments. Thorax coarsely rugosely punctured; mesonotum shining and with punctures somewhat sparse, the four grooves rather indistinct and reaching three-fourths the length of the segment or less. Scutellum coarsely rugosopunctate.

Metanotum very coarsely reticulate, the reticulations large, subpentagonal, and quite uniform in size above, becoming smaller laterally. Mesosternum reticulato-rugose, the teeth large, sharp pointed and rather widely separated.

Tegulae and legs honey yellow, the femora and tibiae with darker tips. Wings faintly smoky, especially on the apical half; veins pale yellowish, stigma dark brown; apex of marginal cell obtusely pointed; the first recurrent nervure entering the second submarginal cell at the middle of its lower margin; transverse median nervure in line with the basal.

The abdomen is shining, very hairy, the simple hairs above mostly yellowish; second segment with the usual felt lines. First segment rugosopunctate, seen from above rather short trapezoidal, length about once and a half the width at base, the sides nearly straight, lateral tubercles small, the segment rather strongly-swollen apically and clearly constricted at juncture with second, the ventral ridge somewhat bisinuate and obtuse dentate basally. Second segment obscurely and sparsely punctured. Last dorsal segment long trapezoidal, the surface mostly shagreened and shining, with fine punctures before the apical

margin; apical angles with tufts of short golden hairs; the slender brown styles are here extended to half the length of this segment.

This species is very clearly distinguished by the sculpturing, and disposition of the pubescence. It was collected at Claremont, California.

4041 *Odontophotopsis mellicornis* n. sp.

Length 11 mm. Castaneous, with white pubescence. Head subtriangular as viewed from the side, sloping behind the eyes, not at all quadrate; viewed from above it is broadly semicircularly rounded behind. Vertex shallowly, irregularly, and sparsely punctured, and with rather short white hairs; occiput and genae fringed with much longer hairs, those on the gular region also long and mostly plumose. Ocelli with the two posterior nearer to each other than to the eyes; space between the ocelli black. Antennae honey yellow, the scape punctured and white pubescent, the first article of flagellum not as long as the second. Mandibles whitish pubescent, and with a blunt tooth subtending an emargination on the lower border; the tips are black and bidentate. Maxillary palpi with articles II, III, and V of equal length, IV a little shorter.

Thorax rather thickly white pubescent, the hairs thickest and longest on prothorax, mesothorax, and scutellum, and with rows of short plumose hairs along the sutures of the prothorax. Mesonotum shining and distinctly but rather sparsely punctured, and with two fine longitudinal grooves on either side. Scutellum opaque and finely rugose. Metanotum shining, coarsely reticulated, the meshes larger and subequal medially, smaller at the sides. Mesosternum punctured, sparsely in front, rugosely behind, and armed with two short teeth near the median line.

Legs honey yellow, apical two-thirds of mid and hind femora blackish, the mid and hind tarsi similarly though not so deeply blackened. Tegulae pale honey yellow. Wings nearly hyaline except for a small cloud in the marginal cell next the stigma; the veins are honey yellow and the stigma pale brown; apex of marginal cell obtusely pointed; the first recurrent nervure enters the second submarginal cell at the middle of its lower margin.

Abdomen mostly shining and with numerous long white hairs equally numerous above and below, and specially dense on the apical half, near the margins of the segments; hind margin of third and succeeding segments dark brown; first abdominal segment long trapezoidal as viewed from above, its length less than twice the breadth at base, strongly constricted at its juncture with the second, below with a strong, rough, evenly curved median ridge; at base and apex of first segment and at apices of second and third segments, passing around the abdomen, are fringes of short plumose hairs, the fringe on second segment thickest and most conspicuous; the second segment is very sparsely punctured; the pubescence on the apical segments has a yellowish cast; last dorsal segment punctured near the basal angles, and with

several shallow depressions apically, the apical angles with tufts of short golden hairs.

This form is close to the *concolor* of Cresson as that species is described, but the two differ in various details. In *mellicornis* the ocelli enclose, but are not "enclosed by" a black area, and the abdomen is blackish apically. A sufficient characterization of the original *concolor* has never yet been given. So far as the original description is concerned, several perfectly distinct far western species might, with a superficial examination, be thrown into it by the careless interpreter.

4042 *Odontophotopsis viereckii* n. sp.

Length 9 mm. Castaneous, antennae, tegulae, legs, and veins in wings honey yellow. Viewed from the side the genae are unusually broad and swollen, though the head is triangular in outline; the eye margin is not simply truncate posteriorly as in the other species described, but is quite distinctly emarginate. Viewed from above the head is broadly semicircularly rounded behind. Vertex smooth and shining, with scattering very shallow punctures, thinly clothed with long and short golden hairs; the anterior ocellus is abnormally enlarged, the two posterior nearer to each other than to the eyes; the ocelli are set in a darkened but not a black area. Occiput fringed with golden hairs. Gular region with a few plumose hairs posteriorly. Articles II and IV of maxillary palpi far more strongly expanded laterally than article III and a little shorter. Scape rather slender, rugoso-punctate, and covered with rather short golden hair. Flagellum dark honey yellow, covered with fine short white down, the first article three-fourths the length of the second. The mandibles are clothed with long golden hairs, and have the usual emargination below which is subtended by a blunt tooth; tips black and tridentate.

Pubescence unusually short and principally golden above. White plumose hairs unusually numerous on thorax, the sides of the prothorax, and the metanotum being clothed with them. Mesonotum shining, shallowly punctured, its four grooves reaching scarcely half its length. Scutellum rugoso-punctate. Metanotum very coarsely and very sharply reticulate, the meshes pentagonal, two or three of those on either side of median line anteriorly run together, forming two long areas; laterally the reticulations are smaller and more irregular. Mesosternum rugoso-punctate, the teeth rather large, very broad at base, and acute at tip. Wings faintly smoky on apical third, veins pale honey yellow, stigma darker; apex of marginal cell narrowly truncated; first recurrent nervure entering second submarginal cell before the middle; transverso-median nervure joining the externo-median beyond the basal.

Abdomen shining, well covered with golden hairs above, and with plumose hairs on apical margins of first to fourth segments, though these form a conspicuous band only on the second; "felt lines" on second segment clearly defined but with few hairs; third segment with the usual speculum. First segment of abdomen as seen from above trapezoidal, length once and half the width at apex, basally rugoso-punctate,

apically the punctures are more shallow and quite remote, the lateral margins bluntly tuberculate, bisinuate, rather strongly constricted at second segment, the ventral ridge strong and raised into a sharp median prominence. Second segment very shallowly and sparsely punctured. Last dorsal segment shagreened basally, with a few very large punctures on apical half, with the tip rounded and apparently lacking the usual tufts of golden hairs at the apical angles.

This is nearest to *ocellatus*, but that species has pale fuliginous wings. *Viereckii* was collected in Ormsby county, Nevada.

4043 *Odontophotopsis ocellatus* n. sp.

Length 9 mm. Castaneous with the legs nearly concolorous and with principally golden pubescence. Head subtriangular as viewed from the side; as viewed from above, broadly semicircularly rounded behind. Vertex shallowly, sparsely punctate, and with very few brownish hairs. Occiput and genae fringed with yellowish hairs, the gular region nearly nude. A black dot on anterior margin of each ocellus; the two posterior ocelli much nearer to each other than to the eyes. Scape honey yellow, coarsely punctured, and with short golden pubescence; flagellum testaceous, slightly darker at tips, and covered with fine short white down, the first article nearly as long as the second. Malar space clearly defined, equal to width of scape. Mandibles with sparse golden hairs, the tooth subtending emargination on lower border very large, as broad from tip to bottom of emargination as the remaining width of mandible; tips black and bidentate, but also with a subobsolete median tooth.

Thorax with the pubescence golden above and in front, white below and behind. Prothorax apparently without plumose hairs. Mesonotum shining, very sparsely and very shallowly punctured; disc with a median groove; the lateral pairs of grooves in place but the outer ones obsolete except near the hind margin. Metanotum coarsely reticulated, the meshes very large and mostly subpentangular, two in the middle anteriorly, of the width of the others but as long as four or five, in front of these two side by side are thrown together in one large space; laterally the meshes are smaller and more irregular. Mesosternum evenly coarsely reticulato-punctate, the median teeth comparatively large and long. Legs slightly paler than the body, extreme tips of mid tarsi slightly darkened. Tegulae slightly paler than body.

Wings evenly infuscated throughout; the veins are honey yellow, the stigma darker; apex of marginal cell obtusely pointed; the first recurrent nervure entering second submarginal cell slightly before the middle of its lower margin; transverso-median nervure joining the externo-median considerably in front of the basal.

Abdomen shining and clothed with long golden hairs, the hairs below very sparse, shorter, appressed and on venter of first segment and apex of second more whitish; second and following segments sparsely punctate; the usual "felt lines" present on the second segment, and on its apical margin a row of white plumose hairs; no other segments have such rows of plumose hairs, but a few golden hairs back of apical

margins on third and fourth segments are plumose. First segment, as viewed from above, long trapezoidal, coarsely rugoso-punctate, lateral tubercles large, its length less than twice breadth at apex, with plumose hairs on basal margin only, rather strongly constricted at juncture with second segment, ventral median ridge with a stout tooth near the basal end; the last two dorsal segments darkened; the last dorsal segment as long as wide at base, opaque, the disc broadly longitudinally depressed on either side, minutely punctured near the subtruncate blackened tip, on either side of which is a tuft of fine golden hair.

The type of this species was taken in Ormsby county, Nevada.

ON SOME HYMENOPTERA COLLECTED BY PROF. C. F. BAKER
IN NICARAGUA. BY P. CAMERON.

MUTILLIDAE.

3427 *Sphaerophthalma anthracia* Camr.

Biol. Cent. Amer., Hymen. II, 352. Chinandega.

1708 *Sphaerophthalma caroli* sp. nov.

Black, the front, the vertex broadly—the mark rounded and narrowed behind, the thorax above, except for a triangular black mark in the centre at the base, the mark occupying the entire base of the thorax and with its apex rounded, the apical mark broadly rounded above extending to the middle of the metanotum which has the apical half entirely black, two moderately large oval marks on the base of the second abdominal segment and two double their size nearer their apex, of reddish orange pubescence; the sides of the third, fourth, and fifth segments broadly covered with silvery pubescence, darkened slightly with a golden tint; the pygidium covered with long dark fulvous pubescence and transversely striated; the hair on the sides of the head, thorax, and ventral surface silvery. Female. Length 12 mm.

The third joint of the antennae is as long as the following two united; the fourth and fifth are brownish beneath. Head wider than the thorax, the temples as long as the eyes; the occiput almost transverse, not keeled, the sides rounded. Thorax fiddle-shaped, the anterior and larger part wider than the posterior, rounded, the sides without distinct teeth. Mesonotum rugosely punctured, the metanotum reticulated, the sides in the middle with three or four small teeth. Pleurae smooth, the apex with a punctured band, which is dilated in the middle. Calcaria and tarsal spines bright rufous. Abdomen sessile, as long as the head and thorax united.

Comes near to *S. phedyma* Cam., and to *S. verticalis* Sm., with which it agrees very closely in the arrangement of the pubescent markings. The former may be known from it by the occiput being clearly transverse and with the sides projecting into a keel, the orange on the metanotum too, is not continuous but divided broadly into two parts; the latter has a stout, longish central tooth with a shorter rounded

one at its base and apex, on the sides of mesonotum at the base, and the sides of the occiput are more broadly roundly narrowed. San Marcos. 3430 ***Ephuta chinandegae*** sp. nov.

Black, thickly covered with longish silvery hair and with silvery pubescence; the two basal abdominal segments with a broad band of silvery pubescence on the apex; the coxae, tibiae, and tarsi thickly covered with silvery pile; the femora sparsely haired, the calcaria and tarsal spines white; wings fuscous, highly iridescent, the nervures and stigma black. Male. Length 6 mm. Chinandega.

Antennae stout, the flagellum covered with a pale pile; the scape more shining, sparsely covered with white hair, hollowed beneath, the sides stoutly keeled; the first joint of flagellum narrowed at the base, about one-half longer than the second.

Front and vertex strongly punctured, the punctures clearly separated. Eye incision large; face and clypeus smooth; mandibles with a broad rufous band near the middle, their base thickly covered with white pubescence. Mesonotum coarsely rugosely punctured, almost reticulated, the reticulations in the middle near the apex longer than the others. Scutellum closely rugosely punctured, thickly covered with white pubescence, longer than it is wide at the base, the sides straight, the apex rounded. Central area on base of metanotum large, about three times longer than wide, of equal width, with the apex rounded; the apex of the segment has a straight, oblique slope. The abdominal petiole nearly as wide at the base as it is at the apex, the latter clearly separated from the second segment, its ventral keel blunt, not dilated, clearly separated at the base. Pygidium irregularly punctured, the third and following dorsal segments keeled in the middle, the keel on the third and fourth shorter, not extending near to the base of the segment. The fourth abscissa of the radius slightly shorter than the basal and more steeply sloped, the third is not as long as the first and second united, the first recurrent nervure is received shortly, but distinctly beyond the middle, the second in the middle.

This is an "*Ephuta*" as defined by Dr. Ashmead, *Canad. Ent. XXXVI*, page 7.

TIPHIDAE.

3437 ***Paratiphia fuscipennis*** sp. nov.

Black; the mandibles and apical joint of the tarsi rufo-piceous, the calcaria white, the tarsal spines bright red; the pubescence white, on the last abdominal segment fulvous; wings and nervures fuscous. Female. Length nearly 7 mm. San Marcos, Nicaragua.

Flagellum of antennae brownish below, covered with a microscopic pile. Head above the antennae strongly punctured, more closely and with the punctures smaller and more closely pressed together, on the lower part of the front than on the vertex. Pronotum except at the apex covered with large, deep, roundish punctures; the mesonotum

with the punctures larger and more widely separated; the scutellum has them smaller; the postscutellum is almost impunctate. The lateral keels of the middle area on the metanotum are roundly curved outwardly and do not unite at the apex; the central one does not quite reach to the apex outside it; on the basal half is a shorter less distinct keel; the space between this and the outer keel is finely, irregularly, transversely striated; the segment, outside the area, closely striated, the striae oblique, curved, and becoming stouter towards the apex. Upper part of propleurae strongly punctured, the lower obscurely rugose, with some scattered punctures; except at the base the mesopleurae are strongly but not very closely punctured and shining; metapleurae obliquely, distinctly striated, the striae clearly separated and weaker below the middle. Basal segments of abdomen sparsely, the apical more closely and strongly punctured; pygidium closely, finely punctured, except round the sides and apex; the central part obscure red; the hypopygium smooth in the centre, the sides punctured.

3434 *Tiphia marcosensis* sp. nov.

Black; the underside of the flagellum of antennae and the fore tibiae and tarsi rufo-testaceous; wings hyaline, the nervures and stigma black; palpi fuscous; vertex and front closely and strongly punctured, a smooth space below the ocelli and a short smooth line in the centre of the front. Face closely rugose; the clypeus distinctly punctured, its apex in the centre clearly defined, not quite transverse; the vertex at the sides of the ocelli smooth, bare, and shining. The whole head thickly covered with white hair. Pronotum, except for a smooth curved band on the apex, strongly, but not very closely punctured. Mesonotum more strongly punctured, the punctures widely separated, the lateral furrow smooth, moderately narrow and deep, and slightly curved. Scutellum much more closely punctured, if not quite so strongly; there is a small triangular smooth space in the middle at the apex. Basal half of postscutellum punctured distinctly and closely, the apical half smooth. Metanotum with three keels, the lateral slightly converging towards the apex, smooth and shining, the base of the lateral part obscurely punctured. First abdominal segment shining, rather strongly punctured; the apical transverse furrow narrow and smooth. The furrow on the base of the second segment distinct, strongly striated; the second segment is obscurely punctured, the third and fourth at the basal half smooth, the apical smooth; the others closely, strongly punctured. Wings hyaline, iridescent, the basal and apical abscissae of the radius roundly curved; the first transverse cubital nervure straight, not oblique; the second shaped like a reaping hook, the "handle" on the lower side, about one-fourth the size of the rest. The first recurrent nervure is received shortly beyond the middle of the cellule, the second near the base of the apical fourth. Calcaria and tarsal spines white. The metanotum appears shorter than usual, being only as long as the scutellum. Male. Length 7.5 mm. San Marcos.

3433 *Tiphia granadaensis* sp. nov.

Black, rather densely covered with white hair; the flagellum of antennae rufo-testaceous; centre of metanotum with two keels which converge slightly at the apex; wings clear hyaline, the nervures and stigma black. Male. Length 5 mm. Granada, Nicaragua.

Lower part of front, face, clypeus and base of mandibles densely covered with silvery pubescence; the front and vertex punctured, the former more closely and not so strongly punctured, its base bordered by a stout keel. Mesonotum sparsely punctured, most strongly in the centre, the apex in the middle with an oblique slope. Scutellum sparsely indistinctly punctured. The central area on the metanotum is smooth, the two keels at the base are slightly curved outwardly; in the basal half is a stout keel, with a minute one on either side; on the sides, inside the spiracles, is a double curved keel. Pleurae sparsely pilose; the metapleurae bare, shining, irregularly longitudinally striated. Across the apex of the petiole is a crenulated furrow; the base of the second segment is depressed and striated; the apical segments are densely covered with longish white hair. The fore tibiae and tarsi are testaceous. The basal abscissa of the radius has a short basal and a longer straight apical curve; it is not much shorter than the second, the third is the shortest and is roundly curved at the apex; the second transverse cubital nervure is broadly roundly curved. The furrow on the sides of the mesonotum is narrow and roundly curved. Palpi dark testaceous. Mandibles blackish. The scutellum is distinctly punctured, except the sides in the middle; the postscutellum is more uniformly punctured.

Comes close to *T. testaceipalpis* Cam. (Invert. Pacifica, I, p. 69), having like that species two keels on the metanotum, if we do not count the half length keel on the basal half.

ICHNEUMONIDAE - MESOSTENINI

3465 *Mesostenoides bakerianus* sp. nov.

Black, the face, clypeus, inner orbits, the lower half of the outer orbits entirely, malar space, the base of the prothorax, a broad band on the edge of the pronotum, tegulae, a conical mark—the base transverse—the apex narrower and rounded, scutellum except on the basal slope, its keels, postscutellum, the sides of the metanotum broadly, the marks covering the spines, tubercles, the lower half of the mesopleurae, the mesosternum except the furrow, a large mark below the hind wings, the lower half of the metapleurae and the apices of the abdominal segments—the bands on the second and third broader than the others—yellow. Legs pale yellow; all the femora broadly black above, the trochanters spotted with black; the fore coxae black below, the two posterior broadly black in the middle above; the apical joints of the four fronttarsi black. Wings hyaline, the stigma and nervures black. Antennae broadly ringed with white. Female. Length 12 mm.; terebra 4 mm. Chinandega, Nicaragua.

Shining. There is a stout keel down the middle of the front, with short irregular ones on either side of it close to the ocelli. Face and clypeus with some scattered punctures, the former with some irregular striae on the dilated centre above. Pronotum dilated near the base. Mesonotum strongly, but not very closely punctured, the base of the three lobes almost smooth, the sides of the central striated near the base. Base of scutellum strongly, but not closely punctured, the apex almost smooth; the centre, between the spines, irregularly obliquely striated, the apical slope more strongly transversely striated. Upper part of metapleurae strongly, closely, obliquely striated, the striae interlacing in the middle; the lower part punctured and striated. Apex of propleurae above the middle rather strongly striated, the top punctured. Mesopleurae punctured below, the base striated; the apex below strongly, obliquely striated, almost reticulated. Abdomen smooth. Tarsi closely spinose.

MESOLEPTINI.

3467 *Neleothismus* (?) *rufo-ornatus* sp. nov.

Black; face, clypeus, the eye orbits (more broadly before than behind), mandibles except at the apex, palpi, two lines obliquely dilated on the outside on the basal half of the mesonotum, tegulae, scutellum and tubercles, lemon-yellow; the apices of the third, fourth, and fifth abdominal segments rufo-testaceous; the upper half of the propleurae and the apical half of the middle lobe of the mesonotum sanguineous. The four front legs testaceous, paler, more yellowish in front, their coxae and trochanters lemon-yellow; the hind coxae and trochanters black, yellow at the apex; the femora red, their tibiae blackish, broadly yellow in the middle above, the tarsi blackish. Wings hyaline, the costa fuscous, the nervures and stigma darker colored; the recurrent nervure is received shortly beyond the only transverse cubital nervure, there being no areolet. Male. Length 8.9 mm. Chinandega.

Face and cheeks punctured, thickly covered with silvery pile, the clypeus more shining, obscurely punctured only above, clearly separated from the face. Thorax closely, distinctly punctured, thickly covered with a silvery pile. Scutellum flat, punctured, keeled laterally at the base. Median segment regularly areolated, the areola longer than wide, five-angled, the base sharply pointed, the apex transverse; the spiracles minute, oval. The metasternum bordered by a stout keel. Fore tibiae very long, the basal two joints united being longer than the tibiae. Wings short, the stigma large, the radius leaving it shortly beyond its middle; the transverse median nervure interstitial. Antennae shorter than the abdomen, black, the basal two joints yellowish below. Fifth tarsal joint longer than the fourth.

In the absence of a female I am not quite certain as to the generic position of this species in the Foersterian-Ashmeadian system.

VESPIDAE.

3446 *Eumenes nicaraguaensis* sp. nov.

Black, the greater part of the eye incision, a narrow line on the top of the outer orbits, a line on the sides of the clypeus above, the basal third of the mandibles, a conical mark above the antennae, its narrow end above, a line along the base of the propleurae, one along the upper edge of the pronotum all round, uniting in the middle with the lower oblique line, a narrow line on the base of the scutellum, post-scutellum, a line on the centre of the narrowed base of the first abdominal segment, a narrow line on its apex, with a mark touching the base of the line on the sides and a broader more irregular line on the apex of the second, bright yellow. Wings fuscous, highly iridescent, the nervures and stigma black, the latter shining. The lower part of the front, eye incision, face and clypeus pale golden, the pubescence on the rest of the body silvery. Male. Length 6 mm. to end of second abdominal segment. Chinandega.

Front and vertex strongly but not closely punctured except at the sides of the antennae. Antennae stout, a narrow yellow line on the apical half of the scape; the claw stout, slightly longer than the apical joint. Clypeus smooth, indistinctly punctured in the middle, the apex distinctly projecting in the middle, the projection twice wider than long, its apical half roundly incised. Thorax strongly and moderately closely punctured, except at the base of the metapleurae. Median segment broadly rounded, the apex with a steep slope and not furrowed. The oblique furrow on the mesopleurae is deep and clearly defined. Abdominal petiole clearly longer than the head and thorax united, its dilated pyriform apex about one-fourth shorter than the narrowed basal part, its lower surface is for the greater part sordid yellow, and there is a distinct transverse furrow close to the apex; the second segment campanulate, clearly longer than its width at the apex. Legs black, the knees and apex of fore tibiae testaceous. Body shining, polished, the thorax short, cubital in front, globular behind, more than twice the length of the "pear" of the petiole. Ocelli almost in a straight line. The second cubital cellule is narrowed in front, not quite half the length it is behind; the third is large and is clearly wider in front than behind.

Belongs to Saussure's Division Omieron (Syn. of Amer. Wasps, p. 70). It seems to be sufficiently differentiated from "*regulus*" by the longer clypeus compared with its width, it being also wider above. not so clearly narrowed and its apex is clearly bidentate. Judging by Saussure's figure (Pl. I, f. 7 b) the abdominal petiole is longer compared with the head and thorax; in *regulus* it is shorter than the head and thorax; in the present species clearly longer than the two combined. The second recurrent nervure is not interstitial as it is in *E. totonacus*; in that species, too, the antennal hook is "very small." *E. aviculus* should, *inter aila*, be known by its strongly punctured abdomen.

DESCRIPTIONS OF NEW SPECIES OF TIPHIIDAE FROM NEVADA
AND SOUTHERN CALIFORNIA.

BY P. CAMERON.

Very little has been done towards the elucidation of the North American species of *Tiphia* and the allied genus of *Paratiphia*. It is not surprising therefore that Prof. Baker has discovered several undescribed species.

Only one species of *Paratiphia* has hitherto been recorded from North America, namely, *albilabris* Spinola; Saint Fargeau, Nat. Hist. des Hymen. III, p. 556, from California, which I have not been able to recognize from the too short description, which might be sufficient if only one species were known, but is quite inadequate when it fits two or three. It seems to be larger than any of the males known to me. To complete my paper I give the description of "*albilabris*": "Entirely black, with grey hairs. Clypeus white. Abdominal segments ciliated with grey hairs. Legs black, their pubescence gray. Wings hyaline, nervures and costa red; stigma and tegulae black. Male. Length three and one-half lines. California."

There is an interesting sexual distinction shown by the males and females of *Paratiphia*. In the females there is only a somewhat triangular area on the base of the metanotum; in the males there are two rows of longitudinal keels, forming small areas.

The species which I described in the Biol. Cent. Amer. II, pp. 235-239, under *Epomidiopteron* are to be referred to *Paratiphia*, which I then could not very well separate from the descriptions given by Sichel (Saussure, Cat. Spec. Gen. Scolia, pp. 264-269). According to Ashmead, Canad. Ent. 1903, p. 39, "*Epomidiopteron* DeRomand is some thing quite different and is apparently allied to *Engycistus* Fox. In the female of De Romand's genus the radial cellule is closed at the apex, the fore tibia is produced into a long acute spine at the middle, and in the male the first transverse cubital nervure is entire, not obliterated at the base." I have not access to DeRomand's paper, and cannot, therefore, come to any conclusion in the matter; but I may point out that Smith shows in his plate *E. julii* DeRom. to have a broken first transverse cubital nervure and seems to be congeneric with *Paratiphia* 12 *maculata*. Cam., Trans. Amer. Ent. Soc. XXX, 94. These large, yellow-spotted species appear certainly different from the small, black, densely haired ones.

Smith's *Tiphia clypeata*, male, (Deser. of New Species of Hymen. p. 187) from Mexico is no doubt a *Paratiphia*, judging from its white mouth and mandibles. The metathorax is described as "longitudinally rugose; the usual three carinae not distinctly observable, but parallel and rather wide apart."

3435 *Paratiphia robusta* sp. nov.

Black, densely covered with long white hair, which on the apex of the abdomen is fulvous in tint; wings hyaline, slightly tinged with fulvous, the stigma and nervures black. Area on base of metanotum almost triangular, but the keels do not unite at the apex; they are slightly curved; in the centre is a stout longitudinal keel; the area is irregularly reticulated; the basal part of the metanotum is closely, finely punctured, more finely on the inner than on the outer side; the spiracles are bordered on the inner side and behind with some longish striae; the apex, behind the keel, is bordered by stoutish striae; the apical slope is rough, the centre irregularly transversely striated. Base of pronotum strongly punctured; the mesonotum is smooth in the centre and more narrowly on the sides, the rest punctured but not so strongly as the pronotum; in the centre of the smooth part are four large punctures forming a row. The sides of the scutellum bear scattered punctures. Pleurae closely, strongly punctured; the propleurae striated behind the middle; the metapleurae more regularly and strongly striated. Hind tibiae on the outer side covered with eight short stout blunt spines besides the apical; they become longer towards the apex; the apex above ends in a spine which is curved above, straight below and sharp, pointed; opposite it is a broader one of equal length and bluntly rounded at the apex. The abdomen is closely strongly punctured, the pygidium bare and smooth. The abdominal hairs fringes are long and dense. Mandibles piceous towards the apex, their upper side deeply grooved. Female. Length 13mm.

Mountains near Claremont, California.

The following three small females described here may be distinguished as follows:

- A. The area on metanotum wide, as long as its width at the base
varipunctata
- AA. The area on metanotum longer than the width at the base.
- B. The keel on metanotal area stout, opaque, the area obliquely
 striated; wings fuscous *fuscipennis*.
- BB. The keel on the metanotum smooth, not stout, the area
 sparsely punctured; wings hyaline *fuscinerva*.

3436 *Paratiphia varipunctata* sp. nov.

Black, covered with white hair, the hair on the apex of the penultimate and on the base of the last segments, golden; the pygidium rufo-piceous; wings hyaline, the stigma and nervures black. The two central keels on the metanotum unite at the apex which is narrowed and

rounded; the keels are roundly curved; in the centre of the area is a narrow keel, which reaches to the narrowed apical part; on either side of it, near the middle, are two small irregular striae; the sides of the metanotum are closely rugosely punctured and more or less obliquely striated; the apex behind the keel is depressed and stoutly striated, the striae clearly separated. The area is longer than its width at the base. Centre of pronotum stoutly punctured. There is a row of punctures along the base of the mesonotum; the sides bear large irregularly scattered punctures. In the centre of the scutellum are three large punctures in a line; the sides are irregularly punctured. Propleurae closely, strongly punctured, the upper half of the apex smooth, the lower striated. Mesopleurae strongly and closely punctured. Metapleurae closely striated except at the base below. Abdominal segments, except the last, closely punctured. Wings hyaline, the nervures and stigma black; the basal abscissa of the radius, if anything, longer than the second. Middle of mandibles rufous. Female. Length 9 mm. Ormsby county, Nevada.

Legs thickly covered with white hair; the apices of the tarsal joints incline to rufous; on the hind tibiae are eight spines, stout, all longer than thick and becoming longer towards the apex; they are dark rufous. Calcaria white.

3440 *Paratiphia fuscinerva* sp. nov.

Black, not very thickly covered with silvery pubescence; the apices of the clypeus and mandibles are rufous; wings hyaline, the stigma black, the nervures fuscous—almost testaceous, the basal abscissa of the radius shorter than the second. Metanotal area distinctly longer than its width at the base; the apex not separated, transverse; the central keel narrow; the sides near the keel irregularly punctured. Head strongly punctured, the ocellar region smooth. Basal half of pronotum closely punctured, the apical smooth. Mesonotum rather strongly punctured, the sides smooth. Scutellum punctured laterally and at the apex, and with two punctures in the middle. Upper half of propleurae punctured, the lower covered with roundly curved striae. Mesopleurae punctured, the metapleurae obliquely striated. Legs thickly covered with white hair; the apices of the tarsi and their spines rufous; the tibiae with seven teeth, the basal short, blunt, indistinct, the last (and outer) much thinner than the others and slightly longer than the penultimate. Length 5 mm. Ormsby county, Nevada.

This is a smaller and more slenderly built species than *vari. punctata*; it may be easily separated from it by the metanotal area being narrower and clearly longer than wide.

The following three males here described may be separated by the followin table:

- A. The basal abscissa of radius one fourth of the length of second. Length 7 mm. *nevadensis*.
- AA. The basal abscissa of radius at least one-half the length of radius. Length over 7 mm.
- B. The keel on pygidium stout, on the basal half only; the mandibles yellow beyond the middle *claripennis*.
- BB. The keel on pygidium narrow, extending from base to apex; the mandibles yellow at base only *bakeri*.

3441 *Paratiphia nevadensis* sp. nov.

Black, covered with longish white pubescence, the clypeus white; the mandibles obscure yellow at the base; wings hyaline, the nervures and stigma black; the basal abscissa of radius one-fourth the length of the second. Head closely punctured, a small smooth space before the ocelli. Pro- and mesonotum closely punctured, the scutellum as strongly but not so closely punctured as the mesonotum. Base of metanotum with two rows of areae, longer than wide, the two rows separated by a transverse keel; the second row has an oblique slope; the apex coarsely shagreened, obscurely, finely striated. Propleurae punctured closely above, the middle depressed and with stoutish keels; the apex smooth. Mesopleurae closely but not strongly punctured. Metapleurae irregularly, stoutly, not very closely striated. Basal two abdominal segments closely, distinctly, the others sparsely, punctured. Pygidium keeled down the middle and along the sides; the sides with large, deep, clearly separated punctures. Hind tibiae with the spines short, black; there are about eight on the outer row. Calcaria and tarsal spines white. Male. Length 6 mm. Ormsby county, Nevada.

This species is readily separated from the other species here described by the short basal abscissa of the radius; in the other species it is longer, being more than half the length of the second.

3439 *Paratiphia claripennis* sp. nov.

Black, shining, densely covered with cinerous pubescence; the clypeus, and mandibles except at the apex, yellowish white, as is also the lower part of the face. Wings clear hyaline, the stigma fuscous in the middle; the nervures black, the basal rufous; the basal half of the radius three-fourths of the length of the second. Pygidium strongly, deeply punctured, a broad smooth line in the center of the apical half; the hypopygium with a broader smooth line down the centre, the line dilated at the base. Front and vertex closely strongly punctured; there is a triangular smooth space below the ocelli, this space being slightly raised; there is a smooth spot at their sides. Thorax closely strongly punctured, the apex of propleurae striated. Mesopleurae more strongly punct-

ured Metapleurae with the apex and upper basal half strongly striated, the lower basal half rugosely punctured. The two basal areae on the metanotum are smooth and shining, about one-quarter longer than wide, of equal width throughout and with the apex transverse. Male. Length 7 mm. Ormsby county, Nevada.

3438 *Paratiphia bakeri* sp. nov.

Black, densely covered with cinerous pubescence, the clypeus and a mark on the basal third of the mandibles yellowish white, the apex of the mandibles rufous; wings clear hyaline, the stigma and nervures black; the first abscissa of radius slightly shorter than the second. Male, Length 8 mm. Ormsby county, Nevada.

Front and vertex closely and strongly punctured, a smooth space in front of and at the sides of the ocelli; the hair on them long and dense. Clypeus sparsely, but strongly punctured its apex in the middle broadly roundly projecting. Pronotum strongly closely punctured to the basal transverse keel, its apical slope coarsely shagreened. Mesonotum with two rows of transverse punctures near the base; the sides and apex irregularly punctured, the centre smooth. Scutellum strongly, closely punctured, the postscutellum more closely and rugosely punctured. The two rows of areae on the base of metanotum are large and deep, the central two are large, wide, about one-half longer than wide and with the apex rounded, not transverse, the apical slope punctured, Pro- and mesopleurae closely and strongly punctured, the latter more closely than the former. Abdomen closely strongly punctured; the pygidium with a smooth narrow keel down the middle, extending from the base to the apex, the sides with large, deep, clearly separated punctures; there is a smooth broad line down the centre of the hypopygium. Hind tibiae with eight spines, the basal three small and close together.

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HYMENOPTERA

NEW WESTERN MUTILLIDAE.—II

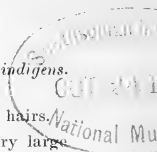
BY C. F. BAKER

Genus *Photopsis* Blake.

Here belong a large part of the male forms which fly to light at night so commonly in many parts of the west. Sometimes dozens may be collected on a single evening and then again weeks may elapse without seeing one. Hence it is only through residents in the southwest that adequate collections will ever be made or the sexes properly associated. The following forms are, of course, all described from males. Among these species, the two posterior ocelli are usually about the same distance from each other as from the eyes. The reticulation of the metanotum is as a rule much more regular than in *Odontophotopsis*, and the abdominal fringes of plumose hairs occur on rarely more than one or two segments in these species and are sometimes entirely wanting.

Synopsis of the New Species Described.

- A.—Legs mostly blackish; length 12 mm.; pubescence of abdomen whitish and scant. *melanderi*.
 AA.—Legs pale yellow or ferruginous.
 B.—Antennae pale ferruginous, unicolorous.
 C.—Pubescence of abdomen ochraceous and short. *indigens*.
 CC.—Pubescence of abdomen white and long.
 D.—Second abdominal tergite with a fringe of plumose hairs.
 E.—Mandibles very deeply emarginate, forming a very large and prominent subtending tooth. *uniformis*.
 EE.—Mandibles shallowly emarginate, forming a low broad tooth. *abstrusa*.
 DD.—Second abdominal tergite entirely lacking a fringe of plumose hairs. *nudatus*.



BB.—Antennae with flagellum black or piceous, in striking contrast to the pale yellow scape.

C.—Length 9 mm. or over; second submarginal cell large, sharply pentangular.

D.—Legs honey yellow in striking contrast to the body.

E.—Length 12-13 mm. *pedatus*.

EE.—Length 9 mm. *ingenuus*.

DD.—Legs concolorous with body. *insignis*.

CC.—Length 7 mm.; second submarginal cell small, suboval
difficilis.

4333 *Photopsis melanderi* n. sp.

Length 12 mm., with terminal segments extended. Dark ferruginous in color, with legs piceous, the second abdominal segment darkened apically and with a conspicuous white hair band. Pubescence mostly white.

Antennae nearly all piceous including portions of scape, the funicular article lighter, second article of flagellum distinctly longer than first. Mandibles tridentate, the lower margin with merely a small swelling back of the middle. Head concolorous, the ocelli appearing black. The small, depressed, very strongly punctate area on upper part of mesopleurae not sharply demarked, the remaining surface as coarsely, strongly, and evenly reticulato-punctate as that below. Scutellum coarsely punctate, the punctures distinctly separated anteriorly. Metanotum coarsely and evenly reticulato-punctate as that below. Scutellum coarsely punctate four of the spaces are thrown together forming two longitudinal areas.

Wings slightly smoky, especially along the anterior border and some streaks within the outer cells; second submarginal cell large and pentangular. All femora and tibiae piceous to black.

First abdominal tergite coarsely rugoso-punctate, nearly smooth apically, the ventral ridge crenulate and straight. Felt lines concolorous. Fringes of plumose hairs occur on second and third segments.

The Rev. Mr. Birkman collected this species in Coryell county, Texas. I can not refer it to any previously described Texan species. It is dedicated to our latest student of Texan mutillids.

4334 *Photopsis indigens* n. s.

Length 9 mm. Color ferruginous, with antennae and legs uniform dark testaceous, the abdomen slightly darkened apically. Pubescence mostly ochraceous, that on abdomen comparatively short.

Antennae pale testaceous basally; second article of flagellum distinctly longer than first. Mandibles on the lower margin with a broad emargination which is subtended by a very large black tipped tooth which is directed distad. Head concolorous, the ocelli appearing silvery. The depressed very sparsely punctate area on upper part of mesopleurae is very large, the sculpturing on the narrow remaining surface very much weaker

than that on lower portion of mesopleurae. Scutellum entirely, coarsely reticulate; anteriorly with four longitudinal areas, the two inner formed by the coalescence of four meshes of the reticulum, the two outer by the coalescence of two each.

Wings with the outer half smoky, a hyaline area on the second recurrent nervure; second submarginal cell large and pentangular. All tarsi slightly darkened.

First abdominal tergite very coarsely punctate except on apical border, the crenulate ventral ridge bluntly toothed near the base. Felt lines concolorous. A fringe of plumose hairs on second segment only.

This species was collected by the author in King's Canon, Ormsby county, Nevada.

1704 *Photopsis uniformis* n. sp.

Length 10 mm. Ferruginous, legs and antennae testaceous, the flagellum slightly darker. Second article of flagellum slightly longer than the first. Mandibles tridentate, the lower margin anteriorly cut out to half the basal width of mandible, the emargination subtended by a very large bluntly pointed, slightly darkened tooth. Area within ocelli black.

The depressed sparsely punctate area on upper part of mesopleurae is very large and broad, the narrow border remaining being very much more weakly sculptured than the lower portion of the mesopleurae. Scutellum reticulato-punctate. Metanotum coarsely and very regularly reticulated, with four larger longitudinal areas anteriorly, the two inner each formed by the coalescence of three meshes of the reticulum, the outer by two each.

Wings slightly smoky on outer half, with a hyaline area over the second recurrent nervure. First abdominal tergite coarsely rugosely punctate at base, to nearly smooth at apex, the ventral crenulate ridge stoutly triangularly toothed basally. Area of felt lines black. The second segment only with a fringe of plumose hairs.

Specimens of this species were taken occasionally at Claremont, Los Angeles county, California.

4335 *Photopsis abstrusa* n. sp.

Length 11-12 mm. Color dark ferruginous, the legs and antennae paler. Pubescence long, mostly white and unusually copious, especially on abdomen.

Second article of flagellum but slightly longer than the first. Mandibles with the inferior tooth unusually large, the lower margin shallowly emarginate on apical half, the subtending tooth low, broad, and very blunt. The silvery ocelli are ringed with black.

The depressed area on mesopleurae above is thickly punctured, bounded caudad by a sharp ridge, beyond which the sculpturing is far weaker and finer than that on lower portion of mesopleurae. Scutellum wholly reticulato-punctate. Metanotum very coarsely but not uniformly

reticulate, anteriorly with four or five of the meshes arranged longitudinally on either side of the median line, the first three or four thrown together.

Wings with outer half irregularly somewhat smoky; a hyaline area on second recurrent nervure; second submarginal cell large and pentangular. First abdominal tergite rugosely punctate basally to nearly smooth apically, the crenulate ventral ridge very weak and with a small tooth at extreme base. Felt lines concolorous. A fringe of plumose hairs on the second segment only.

Occasional at Claremont, California.

4344 *Photopsis nudata* n. sp.

Length 11 mm. Color light ferruginous, the legs proximally, and the antennae, somewhat paler. Pubescence mostly white and quite copious, especially on the abdomen.

Second article of flagellum but slightly longer than the first. Mandibles with the emargination below barely evident and the subtending tooth very small. Interocellar space piceous.

The depressed area on mesopleurae above is very large and shallowly reticulato-punctate, bounded caudad by a sharp brown carina which is extended the whole length of the sclerite; caudad of the carina the surface is far more weakly sculptured than below. Metanotum very strongly and coarsely but quite irregularly reticulate, the meshes varying much in size and number of angles. Wings with the outer half smoky and with a hyaline area over the second recurrent nervure; second submarginal cell pentangular, the marginal unusually distinctly truncate.

First abdominal tergite rugosely punctate basally to nearly smooth apically, the crenulate ventral ridge strong and bisinuate but without prominent teeth. Felt lines concolorous. The second segment entirely lacks a fringe of short plumose hairs though it has many long simple ones.

Collected at Claremont, California. In the absence of a fringe of plumose hairs on second abdominal segment and in the mesopleural characters this species differs remarkably from all others of this collection.

4336 *Photopsis difficilis* n. sp.

Length 6.5 mm. Color light ferruginous, the legs, scape, and funicular joint of antennae, testaceous, the flagellum piceous. Pubescence mostly whitish and quite copious. Second article of flagellum a fourth longer than the first. Mandibles tridentate, below not very deeply emarginated but the emargination subtended by a very large and prominent bluntly rounded tooth. Interocellar space piceous.

Mesopleurae including most of the depressed area above evenly coarsely reticulato-punctate. Metanotum quite regularly reticulate with four large areas anteriorly, two median longitudinal each formed by the coalescence of four meshes, and two short basal transverse areas outside of these formed by the coalescence of two meshes of the reticulum. Wings

with outer half very slightly smoky; second submarginal cell small, about half of the length of the first, its angles all rounded, making its general form oval.

First abdominal segment much shorter and thicker than usual, above reticulato-punctate throughout, the crenulate ventral ridge strongly sinuate and with a sharp basal tooth. Felt lines concolorous. Segments II and III have well developed apical fringes of plumose hairs.

This well marked little species was taken at Claremont, California.

4337 ***Photopsis insignis* n. sp.**

Length 9 mm. Color ferruginous throughout, the tibiae and tarsi a little darker and the flagellum piceous. Pubescence mostly bright ochraceous, rather short on the abdomen. Mandibles tridentate, emargination deep and subtended by a very large, blunt, dark tipped tooth. Head concolorous. Ocelli black, the two posterior distinctly nearer to each other than to the eyes.

Mesopleurae reticulato-punctate, smooth for some distance over the mid-coxae, above with a rather sharp transverse groove, the sparsely punctate area small, not sharply demarked, the remainder sculptured like that below. Scutellum with rather sparse indented punctures. Metanotum coarsely, sharply, but quite irregularly reticulate with four median longitudinal areas at base, the two median each formed by the coalescence of about four meshes, the two lateral each by about two meshes of the reticulum. Wings with outer half smoky and a hyaline area over second recurrent nervure; the second submarginal cell is large and sharply pentangular.

First abdominal tergite rugoso-punctate to near the apex, the crenulate ventral ridge strongly sinuate and with a sharp tooth at base. Felt line concolorous. The second segment only has an apical fringe of plumose hairs.

Occasional at Claremont, California.

4338 ***Photopsis pedatus* n. sp.**

Length 12-13 mm. Color pale ferruginous, the legs, scape and funicular article of antennae testaceous, the flagellum piceous. Pubescence above largely pale ochraceous. The bidentate mandibles have the lower side very deeply emarginate leaving the distal portion unusually slender, the subtending tooth large, broad, and very bluntly rounded. Interocellar space slightly darkened; the hind ocelli large and nearer to each other than to the eyes.

Mesopleurae deeply cut to three fourths of the width by a deep transverse groove, the disc below this strongly reticulato-punctate, above the depressed area is sparsely punctate and the remaining ridge rugoso-punctate. Scutellum coarsely rugoso-punctate. Metanotum coarsely, sharply and somewhat irregularly reticulate, with four basal areas, two median longitudinal formed by coalescence of about three meshes and two outer

large triangular areas formed by about three meshes not in line; these lateral areas are sparsely covered with plumose hairs. Wings with outer half smoky, a darker area near the hind margin and several milky hyaline streaks in the submarginal and third discoidal cells; the second submarginal cell large and sharply pentangular.

First abdominal tergite rugoso-punctate to near the apex; the crenulate ventral ridge strongly concave and with a large tooth near the apex and another sharper one near the base. The area of the felt lines is black. Segments II, III, IV and V with apical fringes of plumose hairs, the first very dense, the last very thin.

This was one of the commonest species at Claremont, California.

Photopsis ingenuus n. sp.

Length 9 mm. In color almost the exact counterpart of *P. pedatus* except paler, and with the whole thorax very much paler, almost yellowish.

In structure this form differs from *pedatus* in the following points: The ocelli are about as near to each other as to the eyes. The mesopleural transverse groove is scarcely evident, the depressed area is very sparsely punctured, while but a small part of the longitudinal swollen portion is sculptured and that indistinctly rugoso-punctate.

Genus **Chyphotes** Blake.

Synopsis of the New Species Described.

A.—Wings with two submarginal cells; pleurae entirely and quite uniformly rugoso-punctate.

B.—Head with upper part piceous; first and second articles of flagellum about equal; median meshes on metanotum regularly, sharply pentangular. *piceiceps*.

BB.—Head with upper part concolorous; second article of flagellum shorter than first, median meshes on metanotum above long and narrow, at the sides larger and subpentangular
californicus.

AA.—Wings with three submarginal cells; portions of pro and mesopleurae smooth, without punctures.

B.—Length 7-8 mm.; head piceous; second article of flagellum longer than first; metanotum with very large, shallow, irregular reticulations. *similis*.

BB.—Length 10 mm.; head concolorous; first and second articles of flagellum of equal length; reticulation of metanotum sharp and deep, the meshes of medium size, and irregular because of sinuosity of borders. *nevadensis*.

4346 **Chyphotes piceiceps** n. sp.

Length 11 mm. Rather light ferruginous, thickly clothed with long ochraceous hair. The legs and antennae are testaceous. Head black above antennae, the face below even darker ferruginous than the body.

Head rapidly narrowing behind the eyes. Hind ocelli a little nearer to each other to the eyes. First and second articles of flagellum about equal. Mesonotum with large coarse punctures which are fairly close though distinctly separated. The pleurae are entirely evenly rugoso-punctate. Scutellum thickly, coarsely, and separately punctate. Metanotum with a strong fairly regular reticulum, the meshes subpentangular, some of them with punctures within. Wings with two submarginal cells, the second as large as the first and receiving the two recurrent nervures in the basal half; apical half of wings smoky, this area traversed by four radiating bands of hyaline.

Petiole as long as the nodose portion of the first abdominal segment. First and second tergites for most part very coarsely and regularly rugoso-punctate.

Taken at Claremont California. This is apparently close to *melaniceps*. The present species differs by having the hairs of the head ochraceous, the face below dark, and in other details which will be apparent in a comparison of the descriptions.

4047 *Chyphotes californicus* n. sp.

Length 10.5 mm. Dark ferruginous, though not as dark as *belfragei*. The pubescence is pale ochraceous and the legs and antennae are uniform testaceous. Head entirely concolorous.

Head broadly rounded back of the eyes. Hind ocelli much nearer to each other than to the eyes. First article of flagellum longer than second. Metanotum with evenly distributed but widely separated punctures. The pleurae have coarse but separated punctures, somewhat rugoso-punctate on metapleurae and upper part of mesopleurae. Scutellum rugoso-punctate. Metanotum with a distinct reticulum, the meshes subrectangular, several times longer than wide and each with a large puncture within near base. Wings with two submarginal cells, the second as large as the first and receiving the two recurrent nervures in the basal half; apical half of the wings smoky, this area traversed by four radiating bands of hyaline.

Petiole two-thirds as long as the nodose portion of the first abdominal segment; the rugosities of the petiole above become strong transverse ridges caudad. First and second tergites for most part thickly "spatter-punctured".*

Taken at Claremont California. This apparently finds its nearest relative in *peninsulari* from Lower California.

4044 *Chyphotes similis* n. sp.

Length 7-8 mm. Rather dark ferruginous, quite thickly clothed with sordid whitish pubescence; legs, scape and funicular joint of antennae testaceous; abdomen darkened apically; head above antennae piceous.

*. Covered with Π -formed marks having a puncture within at the apex, resembling a mark made by throwing a pebble obliquely into a smooth surface of soft mud.

Head narrowly rounded behind the eyes. Hind ocelli slightly nearer to each other than to the eyes. First and second articles of flagellum of about the same length, with extreme base of the first testaceous, the remainder of the flagellum nearly concolorous with the body. Mesonotum with shallow remote punctures. Scutellum medially almost smooth, rugoso-punctate around the sides.

Pro- and metapleurae rugoso-punctate, the mesopleurae anteriorly remotely punctured, posteriorly smooth. Metanotum with a strong reticulum, but with meshes very irregular in size and shape, the surface within the meshes minutely wrinkled. Wings with three submarginal cells, the second about half the size of the first, sub-ovate, and receiving the two recurrent nervures, one near the base and one near the apex; the third submarginal cell is subrectangular, a little wider above, and not half the length of second; apical half of wings smoky, this area traversed by four radiating bands of hyaline.

Petiole not quite as long as the nodose portion of the first abdominal segment. First tergite and anterior portion of second, coarsely "spatter-punctured", remotely so posteriorly on the second tergite; above on petiole and base of nodose portion, the punctures are arranged transversely, forming distinct ridges.

Taken at Claremont California. Apparently related to *nubeculus* of Colorado in general characters, but it lacks entirely the ventral tufts said to be most strikingly characteristic of that species.

4347 *Chyphotes nevadensis* n. sp.

Length 11 mm. Rather dark ferruginous, thickly clothed especially on the abdomen with ochraceous pubescence; legs pale testaceous; antennae honey-yellow; abdomen slightly darkened apically; head concolorous.

Head narrowly rounded behind the eyes. Hind ocelli about equally distant from each other and the eyes. First and second articles of the flagellum of about the same length. Mesonotum with shallow, remote, large, and ill-defined punctures. Scutellum uniformly covered with large, thickly placed, but rather shallow punctures. Propleurae nearly smooth, mesopleurae anteriorly coarsely, evenly, rugoso-punctate. Metanotum with a very strong, sharply defined reticulum which is quite uniform except in a small area on the anterior border where it is finer and more dense; the meshes are large, but very irregular in shape owing to the wavy nature of the bounding ridges; the surface within the meshes is apparently nearly smooth.

Wings with three submarginal cells, the second scarcely half the size of the first, subtriangular and receiving the two recurrent nervures, one just behind the middle, the other near the outer border; the third submarginal cell subrectangular, a little wider above and more than half the length of the second. Apical half of wings smoky, unusually dense in front of the marginal cell, and with the smoky area traversed by four radiating bands of hyaline.

Petiole two-thirds the length of the nodose portion of the first abdominal segment; the nodose portion above and anterior part of second tergite "spatter-punctured" much less strongly so on the latter.

Taken in King's Canon, Ormsby county, Nevada. Also related to *albipes* and *nubeculus*. From the latter it differs in lacking the ventral tufts and in other characters. From the former it differs in not having the "first and second transverse cubital veins uniting above", a character used by Fox in his synopsis. The various descriptions of *albipes* which have been given are wholly insufficient as diagnoses in this genus. However, regardless of what the name *albipes* may possibly apply to, the form described above will be easy to recognize by the characters I have mentioned.

ON SOME HYMENOPTERA. (chiefly undescribed)

COLLECTED BY PROF. C. F. BAKER IN NEVADA AND SOUTHERN
CALIFORNIA

BY P. CAMERON

3449 *Ancistrocerus trichionotus* sp. nov.

Black, the clypeus, mandibles except below and the apex, a small mark wider than long above the antennae, under side of antennal scape, a minute mark behind the eyes near the top, a narrow line roundly narrowed in the middle, the sides obliquely narrowed, an irregular line on the outer side of the tegulae, two broad marks on the apex of the scutellum and broadish bands (the first dilated laterally) on the apex of the abdominal segments, lemon-yellow. Legs black, the under side of the four front coxae, the four front femora below and the tibiae and tarsi, yellow. Wings yellowish hyaline, the apex in front smoky, the stigma testaceous. Male. Length to end of second segment 8 mm. Stanford University, California.

Apical two or three joints of the antennae and the claw rufous; the claw stout, conical, reaching to the apex of the penultimate joint. Front and vertex closely, rugosely punctured, more closely on the front than on the vertex; in the center of the front the punctures run into reticulations. Antennal keel narrow, but distinct. Clypeus longer than broad, the top bluntly rounded, the apex with a rounded incision which is twice wider than long. Pro- and meso-thorax coarsely and closely rugosely punctured; on the sides irregularly reticulated. There are two furrows on the sides of the apical half of the mesonotum. Postscutellum more coarsely, rugosely punctured than the scutellum; its apex with an oblique slope. Sides of metanotum keeled, the bottom projecting into a broad blunt tooth. Pro- and mesopleurae more coarsely rugosely punctured than they are above; the rest strongly, but not closely punctured. Postscutellum with an oblique slope, rounded before and behind, laterally narrowed to a point; the basal half smooth, the apical strongly punctured. Median segment with a steep slope, very short, the sides rounded but with a distinct outer margin. The part at the sides of the scutellum yellow, thickly covered with silvery pubescence. First abdominal segment cup-shaped, short, the sides rounded; the second distinctly longer than wide.

3451 *Ancistrocerus ormsbyensis* sp. nov.

Length to end of second abdominal segment 6-7 mm. Male. Taken in Ormsby county, Nevada.

This species is closely allied to *A. trichionotus* and has, like that species, the head and thorax densely covered with long pale pubescence. The two may be separated thus:

- (1)—The band on first abdominal segment dilated laterally the oblique lower part of the clypeus longer than the upper part; the second abdominal segment longer than its width at the apex. *trichionotus*.
- (2)—The band on the second abdominal segment not dilated backwards laterally, the oblique lower part of clypeus not longer than the upper; the second abdominal segment not longer than its width at the apex. *ormsbyensis*.

Black, the head and thorax densely covered with long pale pubescence; the clypeus, a somewhat triangular spot over the antennae, a short line opposite the base of the antennae, mandibles except the teeth, a short line behind the top of the eyes, a line not much narrowed in the middle on the apex of the pronotum, the outer side of the tegulae broadly, two broad transverse marks on the apex of the scutellum, and broad bands on the apices of the abdominal segments, not much dilated laterally, pale yellow. Legs pale yellow, the four front coxae behind, their femora broadly behind, trochanters, hind coxae, trochanters and femora to near the apex, black. Antennal scape yellow, the flagellum reddish brown below. Wings hyaline, tinged with fulvous, the radial cellule and its neighborhood smoky. Male.

Top of clypeus transverse, with the sides rounded; the apical incision broadly rounded. Front and vertex closely, strongly punctured; the upper part of the thorax is more strongly punctured as are also the sides, where the punctures become more or less confluent. The scutellum is strongly, but not so closely punctured as the mesonotum; in its centre is a deep longitudinal furrow. Postscutellum much more strongly rugosely punctured; its apex is broadly rounded, not obliquely sloped and roundly raised. Sides of median segment broadly rounded, the sides margined, the middle broadly but not much projecting; the apical slope is furrowed down the middle and closely obliquely striated. Pleurae rugosely punctured; the upper half of metapleurae closely, rugosely reticulated, the lower coarsely aciculated and more or less finely striated.

3452 **Ancistrocerus spilogaster** sp. nov.

Black; the clypeus, mandibles, except on the inner side a mark rounded above, a short line on the outer orbits above the middle, the apex of the pronotum including the spines, tegulae, except for a mark on the middle on the inner side, two broad lines on the scutellum, a broad line on the postscutellum, and lines all round on the apices of the abdominal segments, and an oblique mark on the sides of the second segment, lemon-yellow; the second ventral segment yellow, with two longish black lines on the sides and a shorter one in the centre; there is an oval mark, broadest above on the mesopleurae below the tegulae. Legs of a clearer yellow than the body; the coxae above, trochanters, a broad line reaching close to the middle on the upper side of the four front femora and the posterior all round to shortly beyond the middle. Antennal scape yellow below; the underside of the flagellum and the hook brownish red. Wings

hyaline, yellowish along the costa, fuscous violaceous at the apex; costa and stigma fulvous testaceous, the nervures black. Male. Length to end of second abdominal segment 6-7 mm.

Front and vertex closely and strongly punctured. Clypeus longer than its greatest width; the apex roundly incised, the incision wider than long, the sides forming sharp teeth; the upper part of the head covered with long fuscous hair. Apex of pronotum transverse, the sides projecting into stout bluntly pointed teeth. Scutellum with a distinct smooth furrow down the middle; the postscutellum with an oblique slope, there is a transverse depression on either side. Upper side of median segment bordered by a stout keel; in the middle is a bluntly rounded tubercle. Pro- and mesopleurae closely rugosely punctured; in the centre of the mesopleurae is a distinct, deep furrow which extends from the base to shortly beyond the middle; it bears several keels. The upper part of the metapleurae is coarsely punctured, almost reticulated; the lower coarsely aciculated and more or less finely striated. There is a distinct area on the base of the metanotum, bordered by a stout keel which unites with one running down the centre; the surface is covered closely with fine curved striae; the sides below the blunt tooth are bordered by a narrow keel than the upper. Upper part of thorax thickly covered with long fuscous hair, as are also, but not so thickly, the sides. Apices of the basal abdominal segments hardly reflexed; the first segment cup-shaped; the second narrowed at the base, not much longer than its greatest width. Antennal hook stout, twice longer than wide.

3455 *Odynerus* (*Stenodynerus*) *claremontensis* sp. nov.

Female. Black, the clypeus except for three irregular black spots in the centre, a broadish line on the eye incision, commencing at the innerside and extending to the clypeus, an irregular mark, longer than broad, over the antennae, the antennal keel, a short broad line on the outer orbits near the top, the basal third of the pronotum, an irregular oval mark near the apex of the mesonotum, postscutellum, sides of median segment broadly, half behind, half on the sides, the apices of the five basal segments of the abdomen broadly, the bands dilated in the middle, a large oblique mark touching the apical band and narrowed to a point on the inner side, a large irregular oblique mark straight in front narrowed and rounded behind on the sides of the second segment, and the second to fourth ventral segments, sulphur yellow; on the centre of the basal three-fourths of the second ventral segment is a large black mark, longer than broad, the sides of the apex obliquely, narrowly dilated; the other segments broadly black at the base, the bands dilated near the outer side; the last segment is entirely black. Legs yellow, the coxae behind, the four front femora broadly at the base and the hinder for the greater part, black. Wings smoky hyaline, tinged with violaceous towards the apex, the stigma and nervures black. Length to end of second abdo-

minal segment 7 mm. Taken in the mountains near Claremont, California.

Front and vertex strongly and closely, the clypeus strongly and sparsely punctured. Clypeus pyriform, its length equal to its greatest width; the apical incision shallow, wide, the sides oblique. Pro- and meso-thorax punctured like the vertex; the metanotum as strongly but not so closely punctured; the base of metapleurae aciculated; the centre of the mesopleurae is more or less reticulated. Base of metapleurae coarsely aciculated, the apex closely, stoutly reticulated. The suture on the first abdominal segment is stout, narrower in the centre, the sides twisted; the apical border is raised, this being also the case but more narrowly with the second segment.

3450 *Ancistrocerus sutteranus* Sauss.

This species has been taken by Prof. Baker in Ormsby county, Nevada. It seems to be a very variable species, particularly as regards the size and shape of the black markings on the abdomen. In one example the black mark is small and triangular; in another it is large, reaching from the base to near the apex; the sides of the mark are roundly curved inwardly. In one male the first abdominal segment is black except for a mark on the sides at the apex.

3454 *Odynerus (Pachodynerus) cosmiogaster* sp. nov.

Black; the under side of antennal scape, clypeus, mandibles, except along the inner edge, a transverse mark over the antennae, a narrow line along the inner orbits from the antennae to the commencement of the eye incision, a narrow line along the top of the outer orbits, the base of the prothorax, the mark narrow in the middle extending broadly along the pleurae to shortly beyond the middle, the greater part of the tegulae, a large mark below the tegulae longer than broad, the base rounded, the rest straight, the top with two angles, postscutellum, an oblique irregular mark on the lower outer side of the metanotum and the abdomen, sulphur-yellow; the first segment black to shortly beyond the middle except along the sides broadly from near the base and the apex more narrowly, the base of the second segment broadly, the line expanded into a large mark in the middle; this mark having the sides oblique and slightly roundly incised; the third to sixth bear large marks, which are roundly dilated on the sides at the apex; the last segment entirely black, except for a small mark near the middle; the ventral segments to the sixth are broadly black at the base, the marks roundly dilated on the sides at the apex; the last is entirely black. Legs sulphur yellow; all the coxae and trochanters, the four front femora at the base all around and above to shortly beyond the middle and the hinder to near the apex, black. Wings hyaline, the costa and stigma fulvous-testaceous, the nervures blackish. Male. Taken in Ormsby country, Nevada.

Flagellum of antennae reddish brown beneath; the last joint slightly longer than broad, its apex bluntly rounded, narrowed at the base below. Clypeus slightly but distinctly longer than broad, the top bluntly rounded; the apex in the middle transverse or very slightly rounded inwardly, the sides oblique. Apex of pronotum transverse, the sides projecting into short stout teeth. Median segment short, its sides broadly rounded, the middle depressed. Head above and pro- and mesothorax closely and strongly punctured, the punctures more or less confluent. Metapleurae closely, obliquely striated; the centre of metanotum less closely, more strongly and irregularly striated. Head and thorax thickly covered with white pubescence. First abdominal segment short, cup-shaped.

Allied to *O. gadalupensis* and *O. zonatus*.

3453 **Nortonia nevadaensis** sp. nov.

Black; clypeus, mandibles, except at the apex, an irregular mark on either side of the pronotum, an irregularly oval one below the tegulae, two marks on the apex of the scutellum and an irregular narrow line on the apex of the first and second abdominal segments, sulphur yellow, as are also the apex of the fore femora and the tibiae and tarsi. Wings hyaline, the stigma fuscous, the nervures black. Tegulae dark fuscous. Male. Length to end of second segment 6 mm. Taken in Ormsby county, Nevada.

Front and vertex closely rugosely punctured; the front in the middle below with some longitudinal fine striae. Frontal keel stout, a small yellow spot on either side near the top. Clypeus as long as its greatest width, smooth, only very indistinctly punctured, its apical incision twice wider than long, the sides forming distinct teeth. Apex of pronotum transverse, the sides projecting into stout teeth. Basal half of mesonotum irregularly punctured, the centre finely closely rugose; the furrows distinct, moderately deep; there is a shorter longitudinal furrow opposite the tegulae. Propleurae rugose, finely closely longitudinally striated; the mesopleurae coarsely rugose and finely striated above the furrow, smooth and more rounded below it; the metapleurae aciculated, finely closely obliquely striated. Scutellum shining, flat, sparsely punctured. Postscutellum raised, coarsely rugosely punctured. Base of metanotum irregularly reticulated; a depression narrowed towards the apex in the centre; the apical slope not much depressed, the sides rounded, the centre furrowed. First abdominal segment distinctly narrowed at the base, the basal slope oblique, irregularly sparsely weakly punctured, the transverse suture distinct, the apical parts strongly irregularly punctured; the longitudinal furrow is deep; the yellow apical border is roundly raised. The second segment is distinctly longer than wide, clearly narrowed and separated from the first at the base; its ventral apex is bordered with yellow.

I was at first inclined to refer this species to *Symmorphus*, but after comparing it with the description of *Nortonia* given by Saussure (Syn. Amer. Wasps. p. 139) and by Dr. A. v. Schulthess (zeits. f. Hymen, u.

Dipterologie, 1904, 270-283) and with a male example of what I make out to be *N. tolteca* Sauss. from Mexico I am of the opinion that it is a *Nortonia*. My species is much smaller than any of the described species of *Nortonia*. In having a transverse keel on the first abdominal segment (as in *Symmorphus*) it agrees with *N. lugens* Schult. from Peru. The other species have no such suture.

3458 *Polistes aurifer* Sauss.

This species was described from California (Vespides II, 78) where it is one of the commonest species, as it is now also in the Sandwich Islands. It is a variable species, particularly as regards the amount of black on the head, thorax, and abdomen. In extreme varieties the black on these parts may be entirely absent, being replaced by rufous color, especially in the workers. The malar space on the inner side is as long as the sixth antennal segment; the clypeus in the middle above is transverse with the sides straight, obliquely narrowed; the apex in the middle projects broadly roundly, its central part being wider than the lateral. The legs also may want entirely the black colour, it being replaced, as on the thorax, by rufous. Prof. Baker has taken the species at Claremont, Stanford University, and Catalina Island, California. It seems rather remarkable that the species should have spread to the Sandwich Islands and so far as is known to none of the West Indian Islands.

3444 *Trielis xantiana* Sauss.

Prof. Baker sends from Ormsby county, Nevada a female *Trielis* which I can only refer to *T. xantiana* Sauss. It has the thorax entirely black; the head is black except for two marks between and touching the antennae, a small one in the center of the face and the greater part of the clypeus which are red; there are only six large yellow marks on the abdomen, the pair on the first segment present on the typical form being absent. The Ormsby county specimen may of course represent a distinct species; but the material at my command does not enable me to form a definite opinion on the matter. *T. xantiana* is a Californian species, cf. Saussure, Cat. Sp. Gen. Scolia, p. 149-151.

Chalcididae

3481 *Brasema ruficollis* sp. nov.

Brassy, largely tinted with rosy and blue; the abdomen is darker coloured, more purplish in tint, its first segment with a wide pale testaceous band on the apex; the antennal-scape and prothorax rufo-testaceous; the legs are red, the tibiae darker colored. Wings smoky testaceous; a hyaline band near the base, an oblique triangular one (the wide end in front) at the apex. Female. Length 3 mm. Taken at Claremont, California.

Basal two joints of the antennae metallic blue, the others blackish, the basal largely tinged with red and purple. Head closely distinctly punctured, the upper part covered with fuscous, the lower with longer

white pubescence. There is a stout longitudinal keel on the upper half of the face; the oral region is striated; there is a fine blackish keel on the malar space. Thorax covered with white glistening pubescence; the prothorax smooth; the mesonotum and scutellum closely distinctly punctured; the middle lobe of the mesonotum does not reach to the scutellum, is raised and at the apex is gradually narrowed to a point. The pleurae are more shining and less strongly punctured; there is a distinct longitudinal furrow on the apical two-thirds of the meso-pleurae close to the sternum. The scutellum is more strongly punctured than the mesonotum, the furrows bounding it are distinct and deep. Ovipositor very short, broad and white.

Cryptinae.

Erythrocryptus gen. nov.

Areolet large, 5-angled. Radial cellule short. Disco-cubital nervure broken by a stump of a nervure. Transverse median nervure received shortly behind the transverse basal. Transverse median nervure in hind wings broken below the middle. Metathoracic spiracles small, oval, about twice longer than wide; there is a distinct basal keel and an apical one indicated only at the sides. First abdominal segment longer than the second; it becomes gradually widened towards the apex. Parapsidal furrows narrow, not extending much beyond the apex. Clypeus rounded at apex.

Labrum large, rounded, the sides and apex forming a broad rim, the depressed center smooth and shining. Metathorax as long as wide. Antennae long, the first joint of flagellum longer than the second, ringed with white. Colour uniformly rufous. Ovipositor short. Legs slender, the fore tarsi twice the length of the tibiae. The middle segments of the abdomen are punctured, the apices of the second and third are raised. Metapleural carina complete. Temples obliquely narrowed. The apex of the metathorax is not quite transverse, being depressed in the middle. Spiracles of the first segment placed near the base of the apical third.

In Dr. Ashmead's arrangement (Bull. U. S. Nat. Mus. XXIII, 41-42) this genus comes in near *Habrocryptus* and *Idiolispa*.

3964 **Erythrocryptus rufus** sp. nov.

Ferruginous, the inner orbits narrowly and clypeus yellow; the flagellum of antennae black, the scape brownish below, joints 7-9 white. Wings hyaline, the stigma testaceous, the nervures blackish. Female. Length 7 mm., terebra 1.5 mm. Taken in the mountains near Claremont, California.

Vertex weakly punctured in the center; the front closely irregularly transversely striated. Face closely wrinkled-punctured. Pro- and mesothorax closely, distinctly punctured; the propleurae striated in the middle; the mesopleurae finely striated in the center; the upper side of the metapleurae beyond the spiracles somewhat strongly obliquely striated. The second and third segments of the abdomen are closely distinctly

punctured the others smooth. The recurrent nervure is bent in front towards the base of the areolet; it is received in its center. The antennae are nearly as long as the body.

3993 *Campocryptus brevicornis* sp. nov.

Ferruginous, the sutures of the thorax, more than the apical half of the hind tibiae and the flagellum of the antennae, black; the seventh to ninth joints of the flagellum yellowish beneath, the basal dark rufous. Wings fuscous, tinged with violaceous; about the basal fourth of the fore wings, a band of about the same length and of uniform width in the center, its apex reaching close to the apex of the stigma and a cloud extending from the apex of the stigma to the end of the radial cellule narrowed to a blunt point behind where it reaches to the middle of the recurrent nervure, yellowish hyaline; the hind pair of a paler fuscous tint, their base broadly and an irregular cloud beyond the middle, hyaline, tinged with yellow. Female. Length 16 mm.; terebra 7 mm. Taken at Claremont, California.

Antennae not much longer than the thorax, stout, the first and second joints of flagellum about equal in length. Head closely, minutely, indistinctly punctured, covered with pale pubescence; the ocellar region black. Center of face largely roundly projecting, clearly separated from the clypeus. Thorax closely minutely punctured; the scutellum roundly convex, shining. Metanotum minutely closely punctured, its middle closely obscurely reticulated; the apical slope closely, transversely striated; it is oblique, rounded above. Basal two segments of abdomen closely minutely punctured, the post-petiole broad, abruptly dilated. Areolet square, the nervures not converging; the recurrent nervure received close to the apex. The breast and under side of coxae are covered with a fulvous down. Apex of clypeus transverse, obliquely depressed. Head, viewed from in front, long, not much narrowed below, the malar space as long as the antennal scape. The apex of metanotum is only slightly depressed.

So far as I can make out from the descriptions, this species, while closely allied to it, is distinct from *C. calipterus* Say, e. g. that species has the antennae "rather slender" and no pale annulus on them and the metathorax has "a rather prominent lateral carina", cf. Cresson, Trans. Amer. Ent. Soc. IV, 158.

PIMPLINAE

Ateleophadnus gen. nov.

Metanotum with two longitudinal keels in the center of the basal part extending from the base to the top of the apical part, which is steeply sloped. Clypeus clearly separated from the face, its apex transverse. Eyes large, not emarginate on inner side. Areolet oblique, 4-angled, the nervures uniting in front. Transverse median nervure in hind wings broken below the middle. Claws simple.

Apical joint of antennae as long as the preceding two united. Abdomen strongly punctured, the segments without distinct transverse depressions. The temples are wide and not obliquely narrowed, the malar space short. Median segment smooth except on the sides at the base. Parapsidal furrows distinct on the basal slope only. Scutellum not much raised above the mesonotum. The two keels on the metanotum do not form an enclosed area, there being no transverse one at the apex.

In Dr. Ashmead's system this genus comes in near *Delomerista* and *Xanthopimpla* with neither of which can it be confounded.

3978 *Ateleophadnus bicarinata* sp. nov.

Black, shining, smooth except the sides of the basal part of the metanotum and metapleurae which are punctured, the latter strongly; the lower part of the mesopleurae and mesosternum are weakly punctured. Face and clypeus smooth and shining; the face roundly dilated in the middle. Abdomen strongly and closely punctured. Wings hyaline, the nervures blackish, the stigma pale testaceous, fuscous in the middle. Flagellum of antennae brownish below, covered with a pale pile, its first joint about one-fourth longer than the second. Sheaths of ovipositor densely pilose. Transverse median nervure interstitial; the recurrent nervure is broadly roundly curved and is received close to the base of the apical third. Female. Length 8 mm.; terebra 4 mm. Taken during July in Ormsby county, Nevada.

3979 *Glypta xanthogastra* sp. nov.

Black, the apices of the first to third abdominal segments broadly, of the fourth narrowly rufo-testaceous (perhaps discolored) the ventral surface and keel bright sulphur yellow, their basal joint black above; the femora rufous, the tibiae and tarsi pallid yellow; the basal joint of hind trochanters black, apical pale yellow; femora bright reddish-fulvous; tibiae black, the extreme base and a broad band in the middle above white, tarsi blackish, the basal three joints white at the base. Wings clear hyaline, stigma dark fuscous, the nervures black. Female. Length 6 mm.; terebra 4 mm. Taken during July in Ormsby county, Nevada.

Front and vertex closely punctured; the ocellar region and hinder edge of vertex smooth. Face and clypeus closely punctured, thickly covered with silvery pubescence; the face largely projecting in the center, the projection narrowed towards the middle. Apical joints of palpi dark testaceous. Mesonotum closely, distinctly punctured. Scutellum shining, almost smooth, roundly raised. Median segment thickly covered with white pubescence, its apex with a steep slope, narrowly margined above and without keels. Abdomen thickly covered with white pubescence, the oblique depression deep and wide. Tegulae pale bright yellow. Transverse cubital nervure longish, disco-cubital nervure angled and broken by a stump of a nervure; transverse median nervure received distinctly be-

yond the transverse basal. Mandibles testaceous, black at the apex. Clypeus with a large fovea at the sides. Base of first abdominal segment with a stout curved keel which extends shortly beyond the basal depression; in the center of the apical half is a longitudinal depression or furrow. Comes near to *G. tuberculifrons* Walsh.

3963 *Lampronota aciculata* sp. nov.

Black, the legs except the hind tibiae and tarsi bright red; the palpi testaceous. Wings hyaline, the stigma and nervures black. Female. Length 8 mm.; terebra 4 mm. Taken at Gunnison, Colorado.

Face and clypeus alutaceous, the latter with a distinct border above; front and vertex shining, indistinctly finely punctured. Mesonotum closely punctured, the middle lobe more distinctly and strongly than the lateral. Scutellum roundly convex, smooth, shining, its apical slope and postscutellum strongly aciculated. Pro- and mesopleurae closely punctured and more or less finely striated; the metapleurae finely rugosely punctured. Metanotum finely, closely rugose, except on the apical slope where it is smooth and shining; there are two fine slightly twisted keels down the center, a stout smooth keel down the center of the apex, with one or two broken keels on either side; the sides are bordered by an irregular keel. First abdominal segment aciculated at the base, smooth and shining at the apex, the rest strongly aciculated and finely closely striated; the basal half of the second segment finely aciculated, the rest of the abdomen smooth and shining. Transverse median nervure placed shortly behind the transverse basal; the recurrent nervure received at a slightly greater distance than its length from the transverse cubital. Tegulae whitish yellow. Ventral segments broadly white at the apex. Metapleural keel acute, not reaching to the apex. The apices of the second and third segments are narrowly testaceous. Flagellum of antennae densely covered with black pubescence; its first joint nearly as long as the following two united.

Possibly this may be a form of *L. occidentalis* Cr. The ovipositor is certainly not as long as the abdomen and the sculpture is different. The same form of coloration occurs with European species.

Banchini

3984 *Cidaphurus nigrolineatus* sp. nov.

Black, the face except for a line down its center, clypeus, labrum, mandibles except at the apex, the orbits,—the outer entirely—the inner line not reaching to the top, a curved line at the sides of the front ocellus, the two lines uniting into one and running down to near the bottom of the front, palpi, two lines on the basal three fourths of the mesonotum, narrow at the apex, thickened and dilated laterally outwardly at the base, scutellums, their keels, median segment except broadly at the base,

the band dilated at the sides and continued down the base of the pleura and more narrowly down the apex, the base of pronotum, the line dilated at the sides, the large tegulae, a large mark, dilated above on the base of the mesopleurae, and the abdomen except for a longish broad line on the basal two-thirds of the first segment in the center, a band reaching close to the middle of the second, and one on the basal fourth of the third segment, lemon-yellow. Antennae black, the scape yellow, the flagellum brownish below. Wings hyaline, the stigma testaceous, the nervures black. Legs lemon-yellow, the four front coxae behind, the posterior except for a large mark in the center, on the inner side above, the mark continued more narrowly along the apex of the inner side and along the middle below, basal joint of trochanters, broad lines on the femora, on the sides and below, the apical third of the tibiae and the apical joints of the tarsi, black. Male. Length 10 mm. Taken during July in Ormsby county, Nevada.

Smooth, the mesonotum closely, minutely punctured, covered with a minute pile. Scutellar spine long, curved, about four times longer than its width at the base and fulvous colored. Areolet large, the nervures uniting in front, the second bent on the lower side; the recurrent nervure is received near the apex of the basal third. Clypeus narrowed in front, the apex bilobate but not deeply, the lobes rounded, the middle above depressed. Metanotum depressed at the base, the furrow of the depression closely striated; the sides of the apical slope are bounded by a stout keel.

Comes near to *B. spinosus* Cr., but quite distinct. *B. superbus* Cr. has not a long scutellar spine.

4348 *Banchus tricolor* sp. nov.

Black, the face except the black line, narrowed gradually below, the top rounded and united to a mark between the antennae, the orbits broadly, the mesonotum except for a broad line down the middle extending shortly beyond the apex and the sides which are brown; the scutellum except at the apex, post-scutellum in the middle, the metanotum except the top and bottom which are brown tubercles, a broad band of equal width down the base of the mesopleurae, a large somewhat pyriform mark—the broad end above—in the center of the metapleurae, and the apices of the abdominal segments, lemon-yellow; the central part of the latter brown. Legs yellow, the femora largely, apex of tibiae broadly, and the apices of the tarsi, tinged with fulvous. Antennae black, the scape yellow, the flagellum brown below. Male. Length 10 mm. Taken during July in Ormsby county, Nevada.

Scutellum broadly rounded, not much raised, neither spined or tuberculated. Thorax closely punctured, the median segment more strongly than the rest. The latter has an oval depression or fovea in the center of the apical part; the middle of the apical slope is stoutly keeled. The transverse cubital nervures converge in front but do not meet; the re-

current nervure is received in the middle; the transverse median nervure is almost interstitial.

Porizonini.

3976 *Aneucelis* (?) *erythrostomus* sp. nov.

Black, shining; apex of clypeus, antennal scape and legs rufo-fulvous, as are also the third and following segments of the abdomen and the palpi. Wings hyaline, iridescent, the nervures and stigma black. Female. Length 5 mm.; terebra 3 mm. Taken during July in Ormsby county, Nevada.

Head, except the clypeus, closely distinctly punctured; the scutellum more closely punctured than the mesonotum; the metanotum still more strongly punctured, its basal areae coarsely rugosely punctured, the posterior punctured above, transversely striated below; there are two clearly defined areae longer than broad, and of equal width throughout in the center at the base, and there are three on the apical slope; outside is a large triangular area, not clearly closed behind. Pleural suture large, wide, crenulated. Abdomen smooth and shining, the sides of the petiole on the narrowed basal part closely stoutly longitudinally striated. Transverse cubital nervure about four times longer than thick, transverse median nervure received shortly beyond the transverse basal.

Orona gen. nov.

Abdomen petiolated, the spiracles placed very shortly behind the middle of the first segment, the second segment triangular, becoming gradually widened from the base to the apex, the third segment very large and longer than wide. Ovipositor short.

Antennae stout, 20-jointed, the last joint as long as the preceding two united and thicker than they. Eyes moderately large, ovate; there is a distinct malar space. There are four clearly defined areae on the metanotum, a basal central, longer than wide and slightly narrowed towards the base, a large central apical, and a triangular smaller one on either side. The transverse cubital nervure is very short, the recurrent nervure is received considerably beyond it; the second discoidal cellule is closed, the transverse median nervure is interstitial. Palpi short. Metanotal areae aciculated. Parapsidal furrows only indicated at the base. Hind tarsi nearly as long as the tibiae. Metathoracic spiracles placed near to the pleural keel. Antennal middle joints longer than wide.

In Dr. Ashmead's table (Bull. U. S. Nat. Mus., XXIII,) this genus would come in near *Epistathmus* and *Diasparsis*, from both of which it may be known by the 20-jointed antennae. Characteristic, probably, are the clearly separated abdominal first segment, triangular second, and large third.

3968 *Orona* *petiolaris* sp. nov.

Black, shining, the legs dark rufous, the hind tibiae and tarsi almost

black. Wings hyaline, iridescent, the nervures and stigma black. The oral region, mandibles, and a spot on the pleurae below the tegulae rufous. Antennae, thorax, and legs covered with a pale pile. Median segment coarsely aciculated, the basal area more shining, almost smooth. Pleurae strongly aciculated, almost punctured, the upper part of the mesonotum smooth and shining, the lower part almost striated. Abdominal petiole curved, as long as the second segment and the half of the third. Apex of metanotum with an oblique slope. Female. Length 2 mm.; terebra one-half mm. Taken near Stanford University, California.

Ophionidae.

Enytus gen. nov.

Clypeus not separated. Eyes not emarginate, converging at the top. Metanotum with two transverse keels, on the middle only with the basal one, the second more distinct. Fore wings without an areolet. Claws simple. Apex of clypeus broadly rounded. Abdomen of equal thickness from the first segment, not compressed; the post-petiole clearly separated. Apical nervures in hind wings entirely obliterated. Abdomen aciculated.

This genus can only be confounded with the Indian genus *Bosmina* and with *Amorphota* known from the Palaearctic and Nearctic Regions; the latter has an areolet; the former has the claws armed with stout stiff bristles and the metonotum is areolated; in both the hind wings are provided with nervures at the apex.

3967 **Enytus maculipes** sp. nov.

Black, a mark on the under side of the scape, mandibles except at the apex, palpi, four anterior coxae, trochanters and the apical joint of the hind trochanters pale yellow; the rest of the legs rufo-fulvous, the hind coxae, base of trochanters, femora, base and apex of tibiae and the hind tarsi, black; the base of hind tarsi broadly and the calcaria testaceous. Wings hyaline, the stigma and nervures fuscous. Female. Length 4 mm., ovipositor 1 mm. Taken near Stanford University, California.

Head opaque, coarsely alutaceous, covered with white pubescence. Thorax closely minutely punctured, the median segment more closely than the rest, its apical slope finely closely transversely striated. First abdominal segment smooth and shining, the rest opaque, aciculated, covered with white pubescence. Radial cellule wide; the transverse cubital nervure short, the recurrent is received double its length from it; the transverse median joins shortly beyond the transverse basal. Basal two joints of the flagellum equal in length.

INVERTEBRATA PACIFICA

Edited by C. F. Baker, Estación Agronómica, Santiago de las Vegas, Cuba

HETEROPTERA

NOTES ON THE NYSIUS AND ORTHOLOMUS OF AMERICA

C. F. BAKER

Many years ago when first collecting *Nysius*—a genus of true bugs often very injurious to certain cruciferous plants, beets, etc., but also occurring on many other plants—all attempts to arrange the species in my collection according to the original descriptions were attended by unsatisfactory and discouraging results. Had I been a collector of few specimens it might have been possible but I very early acquired the habit of taking large series, and the farther I carried such work, the more surely was the absolute necessity for it recognized. This is equally true among all animals and plants, but *Nysius* has proven an unusually pointed example of it. I have now before me twelve hundred specimens belonging to my two collections, (one in National Museum and one here in Cuba) which have been taken in Colorado, Arizona, New México, Nevada, California, Nicaragua, Oregón, Washington, Alabama, Cuba, and the Eastern United States. The variation in coloration among the individuals of the different species is something altogether remarkable, the general pattern being much the same in all, apparent differences in the majority of cases being due to varying intensity of pigmentation. This fact renders most of the original descriptions of American species almost useless. In two late description (those of *monticola* and *ementitus*), scarcely a single structural character is given, not even the primary ones of amount of curvature of costal margin of corium, and form of bucculae.

After careful studies in the comparative anatomy of the various species were begun, many good characters were found which had not been mentioned by any of the authors. Others which had been mentioned were found impracticable for use in classifying these large series—endless intermediate conditions being of common occurrence. In the matter of the determining of names, I am much indebted to Dr. Uhler and to Mr. Heidemann, the determinations by the former of most of his own species being of especial value. These determinations, together

with copious collections from the various regions have enabled me to recognize under older names several of the groups I take to be of specific value. But most of the older names should under no conditions be used without careful comparison with the types—determinations from the descriptions alone would usually be worthless. There is no doubt but that many of the names represent merely color forms, and likewise some of the names now in use will doubtless be found exactly equivalent to older names if the types were available for study. In other collections which I have seen, the uttermost confusion has resulted from the attempt at grouping according to the color descriptions. In the same species there may be a very wide variation in this respect in a lot taken together on the same food plant, but such a lot will usually be found remarkably uniform in the finer structural details.

The status of the genus in America as to an evolutionary point of view is apparently wholly opposed to that presented in Europe. In America the species of typical *Nysius*, all belong to one general type and present no wide subgeneric divergences, and possess a most remarkably high degree of individual variation in size and coloration. Some of the subgeneric groups of the old genus *Nysius*, I regard as better defined genera than many groups of the Lygaeidae commonly recognized as such. In America we have two very distinct groups of generic value, *Nysius* and *Ortholomus*.

Synopsis of Genera.

- A.—Costal margin of corium straight only near the base if at all, and beyond this more or less rounded; head extended on either side beyond anterior angles of pronotum by less than half width of eyes, the exposed area back of eyes small; bucculae long or short; corium with few fuscous markings and the membrane usually nearly or quite clear..... *Nysius* Dall.
- AA.—Costal margin of corium straight throughout, the two sides parallel or even converging; head extended on either side beyond anterior angles of pronotum by more than half the width of the eyes, the exposed area back of eyes large; bucculae always less than half the length of gular area; corium more or less distinctly densely mottled, and the membrane more or less fuscous spotted, or entirely fuliginous..... *Ortholomus* Stal.

Genus *Nysius* Dall.

Synopsis of Species.

- A.—Costal margin of corium straight for a short distance at base, then distinctly outcurved.
- B.—Bucculae broad, and less than half length of gular region; costal margin of corium straight at base for only about one-fourth of scutellum; a very large species of the west and south *californicus* Stal.
- BB.—Bucculae always more than half length of gular region, the shorter forms very narrow; size medium to small.

- C.—Bucculae narrow anteriorly and more or less evenly diminishing posteriorly, running out to a point; costal margin of corium straight at base for about three-fourths length of scutel, then very gently and gradually outcurved..... *angustatus* Uhl.
- CC.—Bucculae broad throughout their length, strongly so in front, the posterior extremities very obtuse, sometimes here again broadened, the tip in rare cases even slightly excurrent, though never exceeding gulae; costal margin of corium straight at base for nearly the length of scutel and then strongly outcurved.
- D.—Sides of pronotum nearly straight; smaller paler forms.....
senecionis Schill.
- DD.—Sides of pronotum strongly incurved; larger darker forms
coloradensis n. sp.
- AA.—Costal margin of corium very gently rounded from the very base..... *ementitus* Dist.

447 *Nysius californicus* Stal.

Among all the American species this is the most widely distinct by great size—for a *Nysius*—and its short and broad bucculae. It is abundant on the West Coast, from Oregon to Nicaragua at least. The largest and palest forms—the most typical—are found in California and Nevada; from this region towards the north, east, and south, the forms become somewhat smaller and darker, such being of frequent occurrence in Washington, Utah, and Colorado. Nothing is known to me of the extension towards Idaho and Montana. Through Mexico and the Central American countries the forms become not only smaller and darker, but have the membrane strongly fuscous spotted like *Ortholomus*. The more typical examples of this latter kind Dr. Uhler has determined for me as his *providus*, which name can thus only be retained as a variety. The only far eastern extension of the species occurs through Arizona and Texas to Alabama, through which range the individuals become smaller but the membrane remains nearly clear. To this southeastern form I give the name *alabamensis*, it being the dominant variety in Alabama. The specimen recorded by Dr. Uhler from Maryland perhaps belongs here. Dr. Uhler also records the species from Cuba, but in extended collecting there I have found but one large species and that belongs in *Ortholomus*.

444 *Nysius angustatus* Uhl.

This is the most abundant species in the Eastern United States, extending northward into Canada, westward to Nevada, and south into Mexico. I do not know that the larger more typical form passes the southern Sierra Nevada. In Washington State is found a very dark form which I have called variety *niger*. All over the West, even throughout California, occurs a small pale form with the structural

characters of the less common typical form and varying into it everywhere, and which Dr. Uhler first recognized under the name *minutus*.

Many years ago I sent some typical specimens of *angustatus* to Van Duzee and they were determined by him as the *Nysius thymi* of Europe. He also records *thymi* for the vicinity of Buffalo, but does not mention *angustatus* though within the range of the latter as here understood. I have had no authentic European material of *thymi* and so cannot work the matter out from the point of view of structure. However, I shall not be surprised to learn that *angustatus* is *thymi*.

1403 *Nysius senecionis* Schill.

On the West Coast of North America from Oregon through Nevada and California to New Mexico, Mexico, and Lower California, there occurs in abundance a medium sized, mostly pale testaceous *Nysius* which presents remarkably distinctive characters of bucculae and other parts. Dr. Uhler determined this for me as his *strigosus* and independently, Mr. Heidemann verified this determination. It is variable in color though not nearly to the extent of *angustatus*. In coming to compare it with the *senecionis* of Europe, I found myself unable to separate the two on any constant appreciable characters. So we have another case to add to the growing list of animals and plants common to Europe and the west coast of America. Passing north into Oregon individuals become more generally darker, as is true also in Mexico, but these darker ones are also to be found among the lighter ones anywhere.

4410 *Nysius coloradensis* n. sp.

This is somewhat similar to a small *californicus* in size and general appearance but differs widely from that species in structural characters. The bucculae are entirely different; the straight basal portion of costal margin of corium extends about the length of the scutell before it outcurves, whereas in *californicus* the basal straight portion is extremely short, scarcely more than a fourth the length of the scutell. The color is ashy or reddish-ashy with the general type of variable markings of *californicus* and some other species of *Nysius* and with a dense silvery pubescence. The sides of the pronotum are unusually incurved; the width across the eyes is to the anterior border is to the posterior margin of pronotum as 9.5 is to 7.5 is to 11, the anterior margin of pronotum and length being about equal; membrane is nearly hyaline. In the typical form the pubescence of pronotum is silvery white. Length 3.5 to 4.5 mm. I collected this species in large numbers in Colorado but have not seen it elsewhere.

Occurring among individuals of this species are larger ones with a length often of 5 mm., very much darker, the membrane smoky and dark spotted, the pronotum more coarsely and irregularly punctured, and pubescence more scant and ochraceous. I have called this form variety *grandis* of the above species.

4373 *Nysius ementitus* Dist.

Here is placed a considerable series of specimens collected in Nicara-

gua and Cuba, evidently of a single species remarkably well characterized by the unusual form of the costal margin of corium. It is a species about the size and general appearance of *angustatus* and with bucculae similar to *coloradensis*. It has at various times been determined for me as a species of *Cynus*, as *Peliopelta tropicalis* Dist., and finally as *Nysius monticola* Dist., none of which it can by any possibility be. It agrees closely with the illustrations of *Nysius ementitus* of Distant and is doubtless that species. An adequate diagnosis was not presented by Distant, who mentions none but color and other characters which are common to other forms. I have no doubt but that it will be found the same as some of the species previously described from the West Indian Islands.

List of Identified Species and Varieties.

angustatus Uhler.—North America.

1872 Uhler, in Hayden's Geol. Surv. of Montana, p. 406.

1877 Uhler, Bull. Geol. Surv. III, Núm. 2, p. 409.

1894 Uhler, Proc. Cal. Acad. Sci. Ser. 2, Vol. IV, p. 238.

1895 Gillette & Baker, Prelim. List. Hemip. Col. p. 21.

angustatus Uhler, var. **minutus** (Uhl).—Western North America.

1895 Uhler in Gillette and Baker, Prelim. List. Hemip. Col. p. 22
(*Nysius minutus*).

angustatus Uhler, var. **niger** Baker, supra.—Washington State.

californicus Stal.—Western and Southern North America.

1859 Stal, Freg. Eug. Resa, Ins. p. 242.

1874 Stal, Enum. Hemip. IV, p. 120.

1877 Uhler, Bull. Geol. Surv. III, Núm. 2, p. 409.

1894 Uhler, Proc. Cal. Acad. Sci. Ser. 2, Vol. IV, p. 238.

1895 Gillette & Baker, Prelim. List. Hemip. Colo. p. 21.

californicus Uhler var. **providus** (Uhl).—West Indies, Mexico, and Central America.

1894 Uhler, Proc. Zool. Soc. London, p. 183 (*Nysius providus*)

californicus Stal. var. **alabamensis** Baker, supra.—Southeastern United States.

coloradensis Baker, supra.—Colorado.

ementitus Distant.—West Indies and Central America.

1893 Distant, Biol. Cent. Amer. Rhynch. p. 365.

senecionis Schill.—Western North America.

1894 Uhler, Proc. Cal. Acad. Sci. Ser. 2, Vol. IV, p. 238. (*Nysius strigosus*).

List of Unidentified Species.

basalis Dallas.—Jamaica, Brazil.

1852 Dallas, List. Hemip. Brit. Mus. p. 553.

callifer Stal.—Colombia.

- 1874 Stal, Enum. Hemip. IV, p. 120.
destructor Riley.—Eastern United States.
 1873 Riley, Rep. Ins. Mo. V. p. 113.
groenlandicus Zetterstedt.—Greenland.
 1840 Zetterstedt, Ins Zapp. p. 262 (*Lygæus groenlandicus*).
 1874 Stal, Enum. Hemip. IV, p. 121.
jamaicensis Dallas.—Jamaica.
 1852 Dallas, List Heter. Brit. Mus. II, p. 555.
monticola Distant.—Guatemala.
 1893 Distant, Biol. Cent. Am. Rhynch. p. 385.
nubilus Dallas.—Colombia.
 1852 Dallas, List. Heter. Brit. Mus. II, p. 533.
scutellatus Dallas.—Jamaica.
 1852 Dallas, List. Heter. Brit. Mus. II, p. 533.

Genus *Ortholomus* Stal.

This group, first separated by Stal, is a perfectly valid genus, much better founded than are numerous others of the family *Lygaeidae*. The costal margins of corium run straight caudad from the very base or even converge posteriorly, and this character alone separates this genus sharply from *Nysius*. Often considerable of the side margins of the abdomen are exposed.

Whereas but a single species had been previously described from the United States, several have been known to me for some time. One species occurs in great abundance in Nicaragua and is also common in Cuba. Dr. Uhler twice determined this for me as his *inaequalis*. This is evidently the species referred to by Distant as *Nysius spurcus*. The species *N. spurcus* was founded on characters drawn from specimens collected in Tahiti, Rio Janeiro, and Honduras. The original description is not at all diagnostic for species of this genus, and in large collections of American material, I believe that no sure determination could be made from it. Perhaps the types are in existence. It seems more than likely that several species have been confused under this name and that the name must be reserved for the form from Tahiti only. Indeed Stal himself seems to have come to this conclusion in the Enum. Hemip. IV, 120, where he redescribes the species and mentions only the Tahiti specimens. I believe that it would be only pure guesswork and a source of confusion to use the name at present for any American species. On the other hand we may be reasonably sure that this is the *inaequalis* of Uhler.

It seems strange that the *longiceps* of Stal, originally described from Wisconsin has not been oftener collected. I have seen specimens from Wisconsin, Indiana, Pennsylvania and Mexico, and was somewhat surprised to find what is apparently the same thing, in the mountains of Southern California.

Synopsis of Species

- AA.—Transverse line of pronotum reduced to a shining black fovea midway on either side of the pronotum; the width across eyes is to front margin is to hindmargin of pronotum is to length of pronotum about as 9.25 is to 7.25 is to 11.5 is to 8.5; length of head equal to the width across the eyes. Length 5 mm. Northwestern Wisconsin..... *Uhleri* n. sp.
- AA.—Transverse line normal, extending straight across middle of pronotum, sharply but obtusely angled at the sides, the remaining limb gently recurved.
- B.—Ocelli about as near, or nearer to the median line than to the eyes; punctuation of the pronotum sparse and rather fine; large species with the body as a whole, parallel sided.
- C.—Pronotum distinctly longer than the width at apex, strongly narrowed cephalad, the anterior margin is a little more than half length of posterior margin; pronotum variously marked with ferruginous and paler; length of face about equal to the width across eyes.
- D.—Fourth antennal article distinctly shorter than second and as long or shorter than the third; the width across the eyes is to the front margin of pronotum is to the hind margin of pronotum is to the length of pronotum as 8.75 is to 7.25 is to 12 is to 9; Length 4.5 to 5.25 mm. West Indies, Mexico and Central America... *inaequalis* Uhler.
- DD.—Fourth antennal article as long or longer than the second, and longer than the third; the width across the eyes is to the front margin is to the hind margin of pronotum is to its length as 10 is to 7.5 is to 13 is to 9.5; length of head a little less than width across eyes.
- E.—Dark colored, the pubescence white and dense, especially on the scutel. Length 5.5 mm. Mountains near Claremont, California..... *longiceps* var. *Cooki* n. var
- EE.—Paler, the pubescence sparser, shorter, and golden above. Length 5.5 mm. Eastern United States to Mexico and California..... *longiceps* Stal.
- CC.—Pronotum scarcely longer than width at apex, not strongly narrowed cephalad, the width across the eyes is to the front margin is to the hind margin is to the length of pronotum as 12 is to 9.25 is to 13.5 is to 9.5; length of head strikingly less than width across eyes. Colors ashen with black markings, a median longitudinal black band in pronotum, the membrane dark fuliginous. Length 4.5-5.5 mm. Ormsby county Nevada..... *nevadensis* n. sp.

BB.—Ocelli distinctly nearer to the eyes than to the median line; punctuation of pronotum coarser and thicker; a small species with the body as a whole distinctly broadened caudad; the width across the eyes is to the front margin is to the hind margin is to the length of pronotum as 7.75 is to 6.5 is to 9.75 is to 6.75; the head is as long as the width across the eyes. Coloration resembling that of *inaequalis*, the membrane but faintly spotted. Length 3.75-4 mm. Southern California.

arphnoides n. sp

List of Species.

arphnoides Baker, supra.—Southern California.

inaequalis (Uhler).—West Indies, Mexico, and Central America.

1882 Distant, Biol. Cent. Amer. Rynch. p. 190 (*N. spurcus* Dist, non Stal):

1894 Uhler, Proc. Zool. Soc. London, p. 183.

longiceps Stal.—United States and Mexico.

1874 Stal, Enum. Hemip IV, p. 120.

longiceps Stal. var. *Cookii* Baker, supra.—Southern California.

nevadensis Baker, supra.—Nevada.

Uhleri Baker, supra.—Northwestern Wisconsin.

INVERTEBRATA PACIFICA

Edited by C. F. Baker, Estación Agronómica, Santiago de las Vegas, Cuba.

HYMENOPTERA

THE BEE GENUS PASIPHAE IN NORTH AMERICA

BY C. F. BAKER

While in Central America I collected a number of species of *Prosopis* (descriptions to appear soon) which were typical representatives of that genus in every way. Scattered through this collection were a number of bees, very *Prosopis*-like, but possessing a truncated and appendiculated marginal cell and otherwise corresponding to Ashmead's description of the genus *Pasiphae*, previously known only from the southern Andean region. In Trans. Am. Ent. Soc. XXIX, p. 186, Cockerell says "Mr. Vachal remarks that this has a distinct tibial pollen brush, and cannot go with the *Prosopidae*. It appears to be a Colletid with only two submarginal cells." The *Prosopidae* are usually described almost without reservation, as "non-pubescent", a statement that should be considerably modified. It is true that the pubescence is reduced—thin and fine, but distinctly present over most of the body in all of the American species I have seen. What the naked eye or the simple lens does not show in this case, the compound microscope will prove a clearly distinct feature. If the hind tibiae of any *Prosopis* are carefully examined, they will be found usually thickly covered with pubescence. In these Central American bees which I am calling *Pasiphae*, this pubescence is more pronounced than I have found it in any *Prosopis*, and while it might possibly be called a "distinct pollen brush", still I cannot see it as especially similar to any Colletid and believe that the status and relationships of the genus are as stated by Ashmead. The genus *Stilpnosoma*, which is placed in the *Prosopidae*, is still more pubescent, the hind tibiae very thickly so. In *S. turneri* the hairs on under side of tibiae are long, compound and somewhat matted. If the Central American form which I have is a true *Pasiphae*, and by Ashmead's description it appears to be, then *Pasiphae* can be no Colletid even by general habitus, to say nothing more. I shall name this species.

4896 *Pasiphae Cameroni* n. sp.

Male. Length 6 mm. Black, with yellow markings on face and legs.

only. All of clypeus except anterior margin and lower lateral angles, a narrow band immediately above the clypeus, sides of face nearly to antennae—these marks obliquely truncate above, pale yellow. Bases of tibiae and first tarsal articles yellow, the remainder of tarsi testaceous.

Head rugoso-punctate, scape also finely so. Middle anterior margin of clypeus straight, the mandibles nearly reaching the eyes. Viewed from above the head is subrectangular, the width about twice the length. the cheeks above are very wide—as seen from side nearly half the width of eye; from above, the very strong bulge of clypeus and front is brought strikingly into relief. First and second articles of maxillary palpi about equal, the second nearly as long as the third and fourth together. The first article of the labial palpi is more than twice as long as the remainder together.

The thorax is densely evenly rugoso-punctate, the tegulae shining black. Between postscutellum and metanotum is a broad shining furrow partitioned by longitudinal carinae into about sixteen rectangular pits. The metanotum on apical three fourths has a deep rounded shining furrow which is forked caudad. On the upper angles of the metanotum are large patches of silvery white plumose hairs. Sternum thickly pubescent with long white plumose hairs.

Abdomen finely thickly evenly punctate except for the broad smooth, shining, piceous hind margins. The abdomen is rather strongly constricted between the first three segments. The pubescence is rather conspicuous along the bases of the segments after the first, especially at the sides, and along the inner edge of smooth areas, becoming longer and thicker apically where they converge. Femora not especially pubescent but tibiae and tarsi with thick white fine pubescence, longer and heavier on under sides of tibiae. Wings very slightly obscured basally, but evenly smoky in marginal cell and on apical margin. The submarginal cells are of about equal length, the second narrowing above to about half its length below. The basal vein arises considerably beyond the transverse median. I collected several specimens of this very interesting form at San Marcos, on the eastern slope of the Nicaraguan coast range.

AMERICAN BEES RELATED TO MELECTA

BY C. F. BAKER

The group of species previously placed in *Melecta* by American authors is a very heterogeneous one. *Melecta maculata* of Cresson differs as widely from other species of the genus as does *Ericrocis lata*, and is equally entitled to generic recognition. I do not know *mucida*, but from the description I can scarcely believe it a true *Melecta*. The superficial markings are similar in all these groups, but the resemblance

is no greater than for instance between *Lciopodus* and certain *Epeolus* or between *Melecta* and certain *Crocisa*.

Table of Genera.

A.—Middle tibial spur entire; marginal cell not extending beyond third submarginal.

B.—Scutellum strongly bituberculate, the tubercles shortly tooth-tipped; flagellum normal..... *Melecta*

BB.—Scutellum broadly bilobed; flagellum greatly swollen; abdomen but little longer than broad

Micromelecta n. gen.

(type—*M. maculata* Cr.)

AA.—Middle tibial spur bidentate; scutellum broadly roundly bilobed; marginal cell extending far beyond third submarginal; submarginal cells strikingly different in the two sexes; flagellum normal *Ericrocis*.

In a large series of *Melecta* from Colorado, Arizona, Nevada and California, I am unable to separate the *mianda* of Fox from the *californica* of Cresson, except as a variety, since some of the Nevada forms are fairly intermediate. Still I must say that I have not seen Dakota specimens. In my collections are also several specimens of *Micromelecta maculata* from Arizona, collected by Oslar.

In coming to re-examine some Arizona *Ericrocis* on which, following others, I had placed the Texan name *lata*, the conclusion was finally reached that they were not *lata*, at all, and that there were before me two good species in place of one. In both of these the scutellum is pale with two large black spots,—a character which would surely have been mentioned for *lata* had it occurred. Cresson says only, “a patch behind scutellum..... clothed with black pubescence”. The species may be separated by the following table:

Ericrocis

A.—Scutellum covered with white pubescence, a black patch behind it (Texas) *lata* Cr.

AA.—Scutellum white with two very large black patches occupying most of its surface.

B.—Pubescence of face silvery white, on thorax pale; wings subhyaline, with marginal cell, and apical border irregularly, fuscous..... *arizonensis* n. sp.

BB.—Pubescence of face, and thorax above, tawny; wings fuscous throughout *melectoides* n. sp.

4897 *Ericrocis arizonensis* n. sp.

Male. Length 12 mm. Black; whole face above labrum to midway between antennae and ocelli completely covered with very dense silky white, appressed pubescence. Mandibles entirely jet black. The pubes-

cence of gular region black, that of cheeks and occiput sordid white. Antennae narrowly black, ferruginous below, except on scape, the first article of flagellum scarcely longer than second. Mesothorax above and below, except between wings above, covered with long fluffy white pubescence. Two closely approximated angular black spots in center of anterior margin of mesothorax, a large less well defined spot low down on mesopleura, a spot between tegulae and scutellum and two very large completely separated trapezoidal spots on scutellum. The tegulae are testaceous, dark margined within. The metathorax with very little pubescence and that in tufts on the upper outer angles. The pubescence on scutellum is close and appressed, that back of scutellum erect and thin. The hair bands on the abdomen resemble those in certain *Melecta*,—all interrupted, quite narrowly so on the first segment where there is a sparing intermixture of long erect hairs, and most widely on the third; bands on first segment broad and subrectangular, without ventral extensions as in the remainder; on third to sixth narrower but more or less broadened proximally. The lateral enlargements are subrectangular, narrower on second segment and reaching hind margin of the segment, broad and not reaching hind margin on segment III and IV and occurring as nearly or quite disconnected spots on V. Terminal segment deeply angularly emarginate. Venter black except for a median spot of appressed white pubescence on the first segment.

Legs black, the tarsi except basal article ferruginous; fore coxae at tips and middle and hind coxae largely, covered with white appressed pubescence—likewise small areas on underside of middle and hind trochanters; middle and hind femora with a conspicuous fringe of short sooty plumose hairs below, with a sparing intermixture of long pale simple hairs; tibiae three banded above, black below, the terminal bands of pubescence white, the middle black. Wings hyaline, with the veins ferruginous the stigma paler, a smoky cloud through the marginal cell, the outer margin radiately obscured.

Collected at Oracle, Arizona, by Osler.

4898 *Ericrocis melectoides* n. sp.

Male. Length 12 mm. Black; antennae piceous, narrowly ferruginous below. Face, except labrum, to above antennae, covered with very dense silky yellowish white appressed pubescence. Mandibles varying through piceous to ferruginous at tips. Mesothorax anteriorly above with white only. Anteriorly on mesonotum with two large widely separated subrectangular black spots. Mesopleurae below broadly nude, the venter together with mid and hind coxae and trochanters below, covered with short appressed white pubescence. The tegulae testaceous, darker within, a large black spot between tegulae and scutellum, and on the latter two very large subrectangular black spots which are connected behind. Metanotum with tufts of loose pale hairs at outer angles.

Ornamentation of abdomen as in certain *Melecta*, the bands all interrupted—those on first and second for about same distance, on the fourth and fifth a little wider. The bands on first segment are narrowed to rounded points within, and have no ventral extension, those on fifth occurring as large lateral spots; the lateral enlargements are anteriorly narrowed and rounded, those on second segment not reaching anterior margin, those on the remaining segments occupying the entire width of the segments. The venter is entirely black. The legs are colored as in *arizonensis* except that the femora lack the fringes of dark plumose hairs below. The wings are smoky throughout, slightly paler basally.

Collected at Oracle, Arizona by Osler.

ON NEW VESPIDAE COLLECTED BY PROF. C. F. BAKER IN
WESTERN NORTH AND CENTRAL AMERICA

By P. CAMERON

3953 *Ancistrocerus managuaensis* sp. nov.

Black; a triangular broad spot on the top of the clypeus, a short divided spot above the antennae, a small spot on the inneredge of the eye incision, a short line on the outer orbits near the top, a line on the base of the pronotum and one united to it along the upper edge of the pronotum, tegulae, tubercles, a small spot below them, postscutellum except at the apex, a line on the apex of the first abdominal segment above, a broader one on the apices of the second and third all round and a narrower one on the penultimate, yellow. Legs black; the tibiae yellow except behind. Wings fulvous hyaline, the apex fuscous violaceous. Female. Length to end of second segment 8 mm. Managua, Nicaragua.

Clypeus as long as its greatest width, strongly punctured, the punctures longish, especially at the apex which is transverse, its top and sides covered with silvery pubescence. Front and vertex strongly and closely punctured the lower part of the front and the eye incision covered with pale golden pubescence. Pro and mesothorax strongly punctured; the metanotum irregularly transversely rugose; the upper part at the sides and the pleurae reticulated and covered with pale golden pubescence; the sides with an irregular margin. Upper half of metapleurae strongly but not closely punctured. Apex of postscutellum not transverse. Basal segment of abdomen cup-shaped, with a distinctly narrowed base; the apical suture is not clearly defined and the part before it appears irregularly raised; the segment is clearly separated from the second which is longer than wide, is narrowed at the base and punctured closely, especially towards the apex which is raised. The apex of the scutellum is furrowed down the middle. Tegulae large,

fulvous in the middle. The depression at the sides of the scutellum covered with longish fulvous pubescence.

This species belongs to Saussure's group 3 b, Cf. Syn. of American Wasps, 209.

3947 *Ancistrocerus gunnisonensis* sp. nov.

Black; the head, thorax, and base of abdomen thickly covered with long fuscous pubescence; the clypeus, a triangular mark above the antennae, mandibles, a small mark on the outer orbits near the top, a line on the apex of pronotum, a small irregular mark on the sides of the scutellum, the outer edge of the tegulae broadly and broad lines (the first only above) on the abdominal segments, bright lemon yellow. Antennal scape yellow, the flagellum reddish brown below; the hook reddish brown, short, not reaching to the base of the last joint. Wings hyaline, the costa, stigma, and basal nervures fulvous, the apical nervures blackish. Legs black; the four anterior femora broadly towards the apex the posterior knees and all the tibiae and tarsi bright lemon yellow. Male. Length to end of second segment 5 mm. Gunnison, Colorado,

Clypeus longer than its greatest width, almost impunctate, the apex with a distinct rounded incision, the edges forming distinct triangular teeth. Head above the antennae closely strongly punctured; the punctures in the eye incisions stronger than elsewhere. Base of thorax not quite transverse, the middle being slightly dilated; the sides are distinctly bluntly angled. Apical half of scutellum with a wide distinct furrow in the middle. Postscutellum coarsely (more coarsely than the scutellum) rugosely punctured, depressed in the middle, the apex transverse. Sides of metanotum distinctly margined, projecting below the middle into a sharp angle. Pro and mesothorax closely, rugosely punctured, the upper part somewhat strongly, the lower part of the metapleurae finely and more closely longitudinally striated; the metanotum aciculated and hollowed. Abdomen, except on the basal slope, closely punctured, the apices of the first and second segments not reflexed; the last segment is entirely black.

Belongs to Saussure's Section C., Syn. of American Wasps, 167. It is not unlike *A. ormsbyensis* Cam.; that species is larger and more stoutly built; its wings have a distinct fulvous color; its clypeus is longer compared with the width, with the apical incision deeper; the furrow on the scutellum is longer and deeper; the sides of the metanotum at the base more distinctly and strongly reticulated.

3949 *Ancistrocerus lineativentris* sp. nov.

Black; the clypeus, labrum, mandibles except narrowly at the base and on the innerside, antennal scape except above, a small mark over the antennae, a short narrow line on the top of the outer orbits, the upper edge of the pronotum including the lateral projecting edges,

tegulae, a mark wider than long on the sides of the scutellum, postscutellum, a mark longer than wide, transverse above, rounded and slightly narrowed below, on each side of metanotum, and the abdomen, sulphur-yellow; the abdomen has the following black marks: the basal slope of the first segment, a somewhat crescent-shaped broad line united to the basal mark by a short broad line, a large mark on the basal three-fourths of the second, the mark with a large triangular incision in the center of the sides, the apical division not reaching to the sides, a line on the base of the third and fourth segments, the whole of the apical, the basal ventral segment, the base of the second narrower, two irregularly curved lines on the sides and a shorter, narrower, straighter central line running from the basal line. Legs sulphur yellow, the coxae above, trochanters, and more or less of the base of the femora, and the hind femora almost entirely, black. Wings hyaline, slightly suffused with fulvous, the nervures and stigma dark testaceous. Male. Length to end of second segment, 8 mm. Mountains near Claremont, California.

Clypeus clearly longer than wide, almost smooth and bare; the apical incision rounded, shallow. Front and vertex strongly punctured. Thorax about twice longer than wide, the base transverse, projecting into stout bluntly rounded, slightly oblique teeth; the punctuation close and strong; a wide depression in the center of the scutellum. Postscutellum depressed in the middle, sparsely strongly punctured in the center. Sides of metanotum broadly rounded, the center broadly depressed, finely punctured and striated. Antennal hook short, conical, not reaching to the apex of the last joint. First and second abdominal segment strongly punctured towards the apex which is raised; the top of the apical slope is not quite transverse; the base of the second is narrowed and clearly separated from the first.

The pubescence is scanty. Comes near to *A. sutteranus* and *A. aristae*. Seen from above the basal slope of the first abdominal segment is triangular with a distinct neck at the base. It falls into Saussure's Section C., Syn. Amer. Wasps, p. 188.

3954 *Odynerus visellus* sp. nov.

Black with the following markings sulphur yellow: the clypeus, labrum, mandibles except below and at the apex, a small somewhat triangular mark on the front, underside of antennal scape, a short spot on the outer orbits near the top, the hinder edge of the pronotum the line narrowed in the middle, tegulae, a mark about three times longer than wide below the tegulae, postscutellum, the apices of all the abdominal segments; the line on the first and second dilated backward to the base and in the center inwardly, irregularly, the spot being on the apical segments, and the legs except the coxae, trochanters, and femora at the base behind (the hinder femora broadly), bright sulphur yellow. Wings hyaline, tinged with fulvous, the apex slightly with

fuscous-violaceous, the stigma and basal nervures fulvous. Flagellum of antennae entirely black; the hook black, not quite reaching to the base of the penultimate segment. Male. Length to end of second abdominal segment 8 mm. Ormsby county, Nevada. July.

Clypeus slightly but distinctly longer than its greatest width; its apex with a shallow but distinct rounded incision, the sides forming blunt teeth; the whole surface is strongly and moderately closely punctured; the eye incision much more closely rugosely reticulated. Base of thorax not transverse, slightly rounded, its sides not angled; the apex excavated in the middle, its sides margined, more distinctly on the upper than on the lower part, the upper edge at the postscutellum, projecting into a stout tooth, which is longer than its width at the bottom. Pro and mesothorax coarsely, closely, rugosely punctured, the sides more coarsely than the top, the punctuation on them running into reticulations. Metanotum and lower parts of metapleurae finely closely striated; the upper part of the pleurae strongly sloped, smooth. Head, thorax and base of abdomen densely covered with fuscous pubescence; the first abdominal segment smooth, the second closely minutely punctured, its apex strongly punctured, as are also the other segments, especially at the apex; the apex of the first is slightly, of the second largely, curled up. Postscutellum truncate.

Agrees best with *Odynerus* s. str. It comes close to *O. blandus* Sauss.

3956 *Odynerus auranus* sp. nov.

Black; the clypeus, labrum, mandibles, except the extreme apex; a broad line on the lower part of the eye incision, a large mark twice longer than the width at top where it is widest and slightly incised at the middle, a short line on the upper outer orbits, antennal scape below, a broad line on the pronotum extending laterally shortly below the pleurae, tegulae except for a black and brown mark near the base, a small mark on the scutellum near the apex, the sides of the metanotum broadly yellow, and also the abdomen except for the following black marks, namely, a large mark on the basal two-thirds of the first segment, the mark roundly incised laterally in the middle and with the apex rounded; a large mark in the basal three-fourths of the second and with a large incision, widest on the outer side, the bases of the fourth, fifth and sixth segments and the seventh except for two marks at the base. The base of the first ventral segment broadly, and of the second narrowly yellow. Legs sulphur yellow, the coxae, trochanters, and base of femora black above. Wings yellowish hyaline the apex infuscated, the costa, stigma and basal nervures fulvous. Flagellum of antennae reddish brown below, the hook long, stout and black. Male. Length 8 mm. to end of second segment. Ormsby county, Nevada. July.

Stout and broadly built. Clypeus longer than its greatest width, the apex with a wide, shallow, rounded incision; the punctuation close and

strong. Front and vertex closely strongly punctured. Base of thorax transverse, the sides angled but not projecting. The thorax strongly coarsely punctured, the propleurae stoutly striated; mesopleurae more or less reticulated; the metapleurae in the center with fine curved striae; stronger and more curved above, the sides rough, not keeled and stoutly spined in the middle. Basal slope of first abdominal segment steep, punctured, the rest smooth; the second and following segments closely punctured, more coarsely at the apex than elsewhere; the apex of the second segment smooth and sharply curved upwards. Apex of postscutellum with a vertical slope, smooth, serrate above.

The base of the first abdominal segment is more transverse, not so rounded as it is typical *Odynerus*, it showing an approach to *Ancistrocerus*.

3948 *Odynerus cytainus* sp. nov.

Black; the clypeus except for a black mark in the center, the mark obliquely narrowed at the apex, the longer and wider basal part narrowed above and with a short pedicel there, a small mark over the antennae, roundly narrowed above, more longly and obliquely narrowed below, two lines on the outer orbits, the upper the longer and thicker, basal half of mandibles, underside of antennal scape, the pronotum, two short lines on the mesonotum, two marks on the scutellum narrowed on the inner side, the greater part of the postscutellum, a large mark, broad above, incised on the inner side, on the sides of the metanotum, tegulae, except for a brown mark in the center, an irregular mark longer than wide below the tubercles, an oblique irregular smaller mark below its apex, the legs except the coxae and trochanters, and the abdomen except for the following black marks: the basal slope, a transverse broad mark united to it by a short pedicel, the mark transversely roundly incised behind; a broad band, roundly narrowed (but not much) at the apex united by a short pedicel to a broad transverse band which does not, like the basal one, reach the sides, roundly narrowed behind, transverse at the apex; the basal ventral segment, the base of the second and an irregular transverse mark in its center. Wings hyaline, the apex slightly smoky; the costa and basal nervures testaceous, the rest blackish. Female. Length to end of second segment 8.9 mm. Claremont, California.

Front and vertex closely and strongly punctured, more strongly and less closely above than below and covered with longish pubescence. Clypeus as long as its greatest width, pyriform, its apex slightly roundly incised, the lateral angles blunt; the punctuation strong, not very close. Thorax longer than usual, nearly three times longer than wide, the base transverse, the sides not angled; the punctuation is close and moderately strong the upper part of the metanotum is, above, finely, closely, obliquely striated; its upper sides are stoutly keeled, the keel ending shortly below the middle in a stout tooth. First abdominal

segment cup-shaped, broadly rounded at the base, the apex punctured; the apex of the second segment has a broader, more strongly punctured band.

Belongs to the group of *O. sulphureus* Sauss. The thorax is longer than usual compared with its width.

ON SOME VESPINAE FROM BELIZE

By P. CAMERON

The following Vespinae are from the collection of Prof. C. F. Baker and were collected in Belize by Mr. James D. Johnson, a former student of Prof. Baker's. Practically nothing was previously known about the Hymenoptera of Belize.

4452 *Chartergus apicalis* Fabr.

In this species the color of the mandibles varies from black to rufous. In fresh specimens the eyes are densely covered with black pubescence. It appears to be commoner in the northern than in the southern parts of Central América.

4454 *Polybia fasciata* Lep.

Probably common.

4453 *Polybia basimacula* sp. nov.

Sulphur yellow; the flagellum of antennae rufous, its basal joints black above; the scape sulphur-yellow, black above; the following parts are black: the ocellar region, this mark extending roundly behind, its posterior part narrowed and united to a large black mark covering the occiput largely in the center, its upper edge united to the eyes by a narrow line, below the ocellar mark bifurcated into two broad lines which extend obliquely to the antennae; an oblique line on the propleurae, three broad lines on the mesonotum, the central dilated at the base and apex, the lateral at the base where they are united to the scutellum, a larger, more irregular one irregularly narrowed towards the base, a narrow line on the base of the metanotum, a broader one down its center, the pleural sutures narrowly, the basal two-thirds of the first abdominal segment, except in the center below, the line more prolonged above, where it ends in a sharp central point; the second segment to near the middle and the others at the base. Wings hyaline, the costal cellule fulvous, the stigma fulvous, the nervures of a slightly darker fulvous color. There is a narrow black line down the middle of the hind coxae and a similar one on their outer side; there is a broad black line on the trochanters and femora above, and a brownish one, interrupted near the apex, on the upper part of the hind tibiae; the apical joints of tarsi are tinged with fulvous. Female. Length to end of second abdominal segment 9 mm.

First abdominal segment nearly as long as the scutellum and metanotum united, slender, gradually widened towards the apex, where it is fully twice the width of the base; distinctly longer than the second which is clearly longer than the width at the apex; its base narrowed into a neck. Postscutellum flat, obliquely sloped, broadly rounded behind, transverse at the apex, its sides bounded by a deep, curved, oblique furrow. Sides of median segment broadly rounded. Base of thorax broadly rounded; the sides of the metapleurae roundly dilated at the base below. Ocelli forming almost an equilateral triangle, the hinder separated from the eyes by a greater distance than they are from each other. Malar space minute. Third joint of antennae as long as the following two united. Clypeus between the eyes not quite as great as the length; the apex roundly narrowed, not very sharply pointed in the middle. Third abscissa of radius twice the length of second which is nearly as long as the space bounded by the recurrent nervures, the cellule being clearly wider in front than it is in *P. fasciata* Lep.; the recurrent nervures are separated from each other by about the same distance as they are from the transverse cubitals.

Belongs to the group of *P. fasciata* and *fastidiosuscula* Sauss, but more related to the latter than to the former. The latter has black antennae and only a small mark on the vertex, not a large bifurcated one. *P. fasciata* has the first abdominal segment shorter and more distinctly dilated at the apex, where it is much wider; a conspicuous distinction lies in the fact that in the species here described the base of the second abdominal segment is broadly black, in *fasciata* broadly yellow. Very probably, as in all the group, the size and number of the black markings vary.

4457 *Polybia rejecta* Fab. race *belizensis* Cam.

Black: a narrow pale band on the base of the postscutellum, along the apex of the pronotum and on the apex of the first abdominal segment; a narrow darker colored band on the apices of the other abdominal segments; wings rufo-fulvous on the costal and basal cellules, the radial and the apical cubital cellules smoky, the rest hyaline; the nervures and stigma black. Female. Length to end of second abdominal segment 9 mm.

Covered with a grey sericeous pile. Abdominal petiole as long as the scutellum and median segment united, its apical half distinctly nodose; the second abdominal segment distinctly campanulate, its width at the apex equal to the length. Ocelli in a triangle, the hinder separated from each other by half the length they are from the eyes. Central part of front raised, forming a triangle, the apex ending below the antennae, there is a short fovea above the apex in the center. Clypeus slightly longer than the width between the lower part of the eyes, which converge distinctly below; the apex of the clypeus ends in a sharp point. There is a short white mark on the base of the mandibles; the apical tooth is dark rufous. Third joint of antennae nearly as long

as the following two united. Postscutellum prominent, roundly convex; its apex slightly but clearly widened gradually from the sides to the apex. Metanotum short, its slope steep, its apex densely covered with grey pubescence, its middle not furrowed. The second abscissa of the radius about one-fourth of the length of the third.

This form differs from the type in the abdomen being deeply black like the head and thorax, whereas in *rejecta* proper it is paler, brownish to reddish. In the type the apex of the clypeus is distinctly somewhat strongly punctured and has a fovea at the apex. Characteristic of both forms is the distinct transverse keel across the apex of the pronotum extending on to the pleurae. In Saussure's figure this is represented as if it were a spine, the base of the thorax being shown as completely transverse with projecting angles, whereas in the specimens I have seen the angles are rounded.

P. rejecta has been taken by Prof. J. W. H. Trail at Urucaca, Rio Jurua, Amazons, November 9th. Dr. Trail's specimens have stood for many years bearing in W. F. Smith's handwriting, the name of *P. bicolor* Sm. I have no doubt of the latter being identical with *rejecta*-cf. also Fox, Proc. Acad. Phil. Ss. 1898, 449; Schulz, Sitz. Kgl. Bauer. Akad. d. Wissen. V. 791, and Ducke, Boletim do Museu Goeldi IV, 352. What may be another race of *P. rejecta* has been taken by Prof. Trail at the Rio Javary, Amazons, or perhaps it may be a distinct species, for the petiole is distinctly longer than it is in *rejecta* type.

Polybia rejecta Fab. race *javaryensis* Cam. (sp. nov. ?).

Colouration as in *P. rejecta*, but with the pleurae, median segment and petiole rufo-testaceous, the wings hyaline, only slightly suffused with fulvous, the apex only very slightly infuscated, the apex of pronotum, a line on the base of postscutellum and on the apex of first abdominal segment, pale yellow. The part between the antennae is broader than it is in *rejecta*, broader at the apex, flat, a slight furrow in the center above; clypeus smooth, an elongated fovea at its apex, followed by three small ones in a triangle. Abdominal petiole fully half the length of the thorax, its apical half dilated; it is slightly longer than the second segment. Mandibles black.

4455 *Polybia occidentalis* Ol. (*pygmaea* Fab.)

All the specimens sent (probably workers) have the apex and sides of the clypeus bordered with pale yellow, and there is a short narrow line on the face close to the eyes. The yellow mark on the metanotum is large and appears like two oval ones united. These specimens agree exactly with a specimen named for me *P. albopicta* Sm. from Demerara, by the late W. F. Smith, and I have no doubt but that the latter is only a synonym of *occidentalis*. The markings in color vary from pale or whitish yellow to bright orange yellow, the latter being the case with those from Chinandega, Nicaragua, and from Obidos, Brazil, i. e. the northern specimens have the color paler than the southern.

4460 *Polybia melanaria* sp. nov.

Black; the antennae rufous toward the apex, the wings fuscous, tinged with violaceous, the stigma dark rufo-testaceous, the costa and nervures black. Female. Length to end of second abdominal segment 17 mm.

Smooth, covered with a dark pile; there is a paler brownish line on the outer orbits and on the edges of the pronotum. Clypeus longer than wide; its apex bluntly rounded; on either side of the middle are two minute tubercles; the sides on either side of these are fringed with golden hair. Eyes converging below the malar space less than the length of the antennal pedicel. Ocelli small, placed in a triangle, separated from the eyes by almost twice the distance they are from each other. There is an impressed line down the middle of the mesonotum; an indistinct furrow on the scutellum and a wider deeper one on the postscutellum. Metanotal furrow narrowed above; there is a narrow keel down its middle. Abdominal petiole long, narrow, cylindrical, not perceptibly dilated towards the apex, as long as the thorax and longer than the rest of the abdomen. The second abscissa of the radius is one third the length of the third and slightly less than the space bounded by the recurrent nervures. The second abdominal segment is narrowed in to a neck at the base, becoming gradually wider towards the apex.

A distinct species readily known by the black color of the body and wings, by the long, slender, cylindrical abdominal petiole, and by the eyes not converging so much above. There are two spines on the middle tibiae. Hind tibiae not extending beyond apex of abdomen. Looks like an *Apoica*. Belongs to Saussure's Division "Kappa" (v.)

4456 *Apoica pallida* Ol.

This fine species, when fresh, has the abdomen densely covered with a beautiful white micaceous pubescence. It has not been recorded so far north before, as known to me. From the large size and pale color of this species and the large ocelli (as in *Ophion* and other Hymenoptera known to be of nocturnal habit) I should think that this species is also more or less nocturnal.

4451 *Polistes carnifex* Fab.

A common, widely distributed Neotropical species.

4458 *Eumenes regulus* Sauss.

A male with the yellow and rufous markings largely developed.

DESCRIPTIONS OF THREE NEW SPECIES OF SOCIAL VESPIDAE
WITH NOTE ON POLYBIA ALBOPICTA SM.

By P. CAMERON

1520 *Chartergus mexicanus* sp. nov.

Small, broad, the pubescence sparse, inconspicuous, microscopic; a narrow band on the first abdominal segment above, a broad one (occupying about one-fourth of the segment) on the apex of the second, and bands, slightly narrower than that on the second, on the other segments all around, yellow. Wings hyaline, iridescent, the nervures and stigma black. Female. Length to end of second abdominal segment 6-7 mm. Acapulco, Mexico (Prof. C. F. Baker).

First abdominal segment small, cup-shaped, a distinct neck at the base, much narrower than and clearly separated from the base of the second segment, voluch is as long as the width of the apex; bare segments are strongly, distinctly and moderately closely punctured. Head margined behind, the center less strongly than the sides; pilose. Clypeus 5-angled, broader than its greatest length, the apex smooth, the rest finely, closely and for the most part longitudinally striated. Mandibles shining, smooth, except for some weak punctures near the apex. Postscutellum smooth and shining, bare, as is also the apex of the scutellum, the two forming a continuous oblique slope, except at the top of the postscutellum in the centre, where the latter is dilated. Median segment depressed, smooth and shining in the center which bears a not very distinct longitudinal keel; the sides are broadly rounded, not angled or toothed. The third antennal article is nearly as long as the following three united, distinctly narrowed at the base.

Belongs to Ducke's group of *Nitidus*, cf. *Sobre as Vespides Sociais do Para'*, Boletim de Museu Goeldi, IV p. 325.

Chartergus aztecus sp. nov.

Black; densely covered with pale pubescence; a narrow pale yellow line on the apex of the first abdominal segment above, and broader yellowish-rufous bands on the following segment; a short reddish line opposite the antennae touching the eyes; a narrow line on the apex of the clypeus and the greater part of the mandibles are piceous red.

Wings fulvous yellow, paler towards the apex, the nervures and stigma fulvous. Female. Length to end of second abdominal segment 7 mm.

A broad species compared with its length; the abdomen distinctly wider than the thorax, its basal segment very short, inconspicuous, flat cup-shaped, much narrower than the second, which is large, as long as wide, roundly narrowed at the base. Front and vertex punctured.

tured, the punctures not deep, clearly separated; the ocelli do not form quite an equilateral triangle, the hinder being separated from each other by a slightly greater distance than they are from the anterior. Temples rounded, as long as the eyes above. Occiput bordered by a furrow behind. Eyes pilose. Malar space small. Scutellum large, projecting distinctly over the median segment, its apex slightly roundly incised in the middle, the sides broadly rounded. Postscutellum and median segment with an almost vertical slope,, the former with a curved pale yellow line round the top; the sides of the metanotum roundly broadly projecting above. Clypeus clearly wider than long, almost impunctate, the apex bluntly rounded in the middle. Third abscissa of radius about four times the length of the second.

Agrees best with the group of *ater* Ducke. The projecting scutellum separates it readily from *C. mexicanus* described above. The form of coloration of that species (including the dense silky pubescence) is a common one with neotropical solitary wasps, e. g. *O. nasidens*. The third joint of antennae is three times longer than the second and nearly as long as the following two united. From Mexico.

3952 *Chartergus tuberculatus* sp. nov.

Black, densely covered with a silky pile; the underside of the antennal scape, a broad line on the lower side of the eyes incision, the lower half of the outer eye orbits, the clypeus except for a semicircular mark on the top, a line on the apex of the pronotum, postscutellum, the apices of the basal six abdominal segment and an obscure mark in the center of the seventh, pale yellow. Legs black; all the coxae below, the fore femora below entirely, and the four posterior broadly at the apex, pale yellow; wings clear hyaline, the nervures black. Male. Length 8 mm. Rio Branco, Obidos, Brazil (From collection of C. F. Baker).

Eyes large, bare, converging below; the malar space almost obsolete. Ocelli in a triangle, the hinder separated from each other by about the same distance as they are from the eyes. Temples roundly obliquely narrowed. Clypeus a little longer than its width at the lower edge of the eyes, the apex bluntly rounded in the middle. Apex of pronotum roundly convex. Postscutellum broadly roundly tuberculate in the middle. Median segment very short; it has an almost vertical slope and is densely covered with silvery pubescence; the upper, outside forms a distinct oblique angle, which does not reach the middle, the rest of the sides broadly rounded. There is a distinct longitudinal furrow in the center of the upper third of the metanotum. First abdominal segment large, cupuliform, with a distinct petiole at the base, twice longer than wide; there is a brownish mark on either side of the second abdominal segment.

The front is sparsely but distinctly punctured in the middle; there is a short furrow below the ocelli. Pro and mesothorax closely, dist-

inety punctured; the scutellum is more strongly punctured than the mesonotum; the postscutellum and the median segment are impunctate. The postscutellum has a steep slope, longish and transverse below. Except the apical, the abdominal segments are closely strongly punctured. The recurrent nervures are close together and are received behind the middle of the cellule.

Belongs to Dueke's group of *Chartarius* l. c. p. 324. It is not, I consider, the male of either *chartarius* Ol., or *globiventris* Sauss. The males of the species of *Chartergus* seem to be comparatively rare. The present species appears to be more nearly related to *chartarius* than to *globiventris*, e. g. the latter has not a yellow line on the pronotum, and according to Saussure (Vespides, 222), the postscutellum has "a rudiment of a tubercle"; the postscutellum of *chartarius* he describes, l. c., as bearing in the middle a "spiniform tubercle".

3944 *Polybia albopicta* Sm.

Prof. Baker sends, taken at Obidos Brazil, a *Polybia* which, except that the markings are of a more yellowish hue, agrees with a specimen named for me by W. Frederick Smith, *P. albopicta* Sm. (Cat. Hym. Ins. Brit. Mus. V. 131) and taken by the Rev. W. Harper in Demerara. It belongs to Saussure's Division "M. Y. (IVe Div.)". It is smooth, impunctate; there is a malar space as long as the pedicel of the antennae. Ocelli in a triangle; the hinder separated from the eyes by twice the distance they are from each other. The third antennal joint is nearly as long as the following.

NEW SPECIES OF TIPHIA COLLECTED BY PROF. C. F. BAKER IN NEVADA AND NICARAGUA

By P. CAMERON

3431 *Tiphia truncata* sp. nov.

Length 8 mm. Male. Ormsby county, Nevada. July.

This species may readily be known from *nevadana* and *puncticeps* by the central keel on the metanotum being obsolete, by the apex of the radius being straight, not rounded, and by the metapleurae being closely striated throughout, strongly above, more weakly below.

Front and vertex strongly, closely punctured except for a space behind the hinder ocelli; the front more closely punctured than the vertex, below almost reticulated. Face and clypeus strongly closely punctured except for a narrow curved band on the apex. Mesonotum strongly, but not closely punctured, a smooth space along the sides. Scutellum not so strongly punctured and with a smooth space before

the middle; the postscutellum similarly punctured. Area on metanotum wide, its length not twice the width at the base where there is a short longitudinal irregular keel in the center, bordered by a few weak transverse striae; sides of metanotum stoutly irregularly reticulated, almost smooth on the outer side at the apex. Upper part of propleurae punctured, but not very closely; the metapleurae strongly, striated above, more weakly below. Abdomen weakly punctured at the base, more strongly at the apex, the pygidium deeply strongly punctured all over, its sides raised. The apex of the radial cellule distinctly projects beyond the cubital; the second cubital cellule is widened in front and receives the recurrent nervure distinctly beyond the middle. Calcaria and tarsal spines pale fulvous.

The apical slope of the metanotum is finely, closely, irregularly striated.

3940 *Tiphia nevadana* sp. nov.

Black; the pubescence white, the wings hyaline, the nervures and stigma black, the area on metanotum with two lateral and a central keel reaching to the middle and having three irregular transverse keels on either side of the basal half; the apex depressed; the area is twice longer than wide and is slightly narrowed towards the apex. The sides of the metanotum to shortly beyond the middle are stoutly transversely striated; the apex is depressed, the depression irregularly striated at the base, its apex smooth, the outer edge is rounded and irregularly transversely stoutly. reticulated. Metapleurae stoutly longitudinally striated, the striae broken at the base. Base of propleurae irregularly striated, bordered at the apex by a stout keel; the middle at the base broadly aciculated and finely striated, the rest smooth. Mesopleurae punctured, strongly, but not closely. First abdominal segment shining, sparsely, weakly punctured, the apex with a strongly punctured belt; the second segment is sparsely and weakly the others more closely and strongly, punctured, the punctuation becoming closer and stronger towards the apex, the apical segments also being covered with white pubescence. Radial cellule narrowed from the first transverse cubital nervure, the apex is rounded and projects slightly beyond the dilated front part of the transverse cubital nervure; the second recurrent nervure is received shortly but distinctly beyond the middle. Vertex sparsely punctured in the center, the inner orbits there with a double row of punctures, of which the inner is the closer and more regular; front, except in the center, closely and strongly punctured. Face strongly punctured in front, the base more closely and weakly. Clypeus projecting, smooth, its apex not quite transverse and slightly projecting. Legs covered with white hair; the calcaria and tarsal spines pale testaceous. Mandibles black, slightly piceous towards the apex; palpi blackish-testaceous. Male. Length 6 mm. Ormsby county, Nevada.

3932 *Tiphia puncticeps* sp. nov.

Length 5 mm. Male. This species is closely related to the foregoing, from which it may be separated thus:

- I. Front and vertex closely strongly punctured all over; the central keel on metanotum reaching to the apex, the area closely striated to near the apex; pronotum strongly and closely punctured; propleurae strongly punctured throughout, its center not keeled and smooth..... *puncticeps*
- II. Front and vertex not strongly closely punctured all over; the central keel on the metanotum reaching to the middle; the area with three or four stout transverse keels on the basal half; pronotum weakly punctured at the base, the apex smooth, the basal slope smooth, impunctate above; propleurae smooth, striated finely at the base only; pygidium smooth and shining in the middle on the apical half..... *nevaadan*

The punctuation on the upper part of the head is strong and close all over, except for a smooth space on the sides of the ocelli. Face closely strongly punctured; the clypeus not projecting much, its apex smooth. Mandibles black. Palpi black, obscure testaceous on the apices of the joints. Head densely covered with long white hair. Pronotum strongly punctured except at the apex, the base above bounded by a stout keel. Propleurae punctured above, the rest except at the apex, sharply striated. Mesonotum and scutellum somewhat strongly closely punctured; the punctuation on mesonotum fine and closer at the apex. Areola on metanotum twice longer than its width at the base; it is narrowed towards the apex, and is irregularly transversely striated. Sides of metanotum aciculated, with some irregular striae; the apex is depressed and has two stout keels in the center, the apical slope is opaque and aciculated. Metapleurae irregularly striated at the apex; the base above with three stout keels. Abdomen shining, thickly covered with long white hair, not very strongly or coarsely punctured; the first segment with a punctured belt on the apex; on the apical segment the punctuation is large deep and close; the last segment is strongly punctured, its sides below hollowed, bordered above the hollow by a stout keel. Apex of radius rounded not projecting beyond the transverse cubital nervure, the second recurrent nervure received shortly beyond the middle; the second transverse cubital nervure is roundly curved in front, and is very little sloped below. Temples oblique, straight.

3939 *Tiphia crenulata* sp. nov.

Black; the hair, spines and calcaria white; the flagellum of antennae inclining to fuscous below; the wings highly iridescent, hyaline, the stigma and nervures blackish. Head above the antennae closely and strongly punctured, more sparsely around the ocelli, more closely below;

there is a narrow but distinct furrow on the lower half of the front. Clypeus closely punctured, its apex broadly rounded, fringed with long white hair. The black mandibles are covered with long white hair. Pronotum closely punctured except at the apex. Mesonotum with a square of large, deep, clearly separated punctures surrounded by a smooth space; the sides and apex have also a belt of punctures. Scutellum punctured, a smooth space on either side of the middle; the postscutellum rugose. Metanotum with three keels, the outer slightly converging towards the apex; the area formed by them is twice longer than the width at apex; the middle keel does not reach to the apex; the area is not quite smooth, the outer side of the metanotum is aciculated at the base; the apical slope is opaque and thickly pubescent. Upper part of propleurae smooth, the base and the lower half irregularly striated; mesopleurae punctured, but not closely or strongly; the upper half of the metapleurae with stout clearly separated striae, the lower more closely and much more finely striated. First abdominal segment closely and strongly punctured; there is a distinct crenulated transverse furrow near the apex; the other segments are punctured and thickly covered with longish white pubescence, which is longest and thickest towards the apex. Radial cellule short, wide, its apex wide, the apical abscissa of the radius bluntly rounded, the second transverse cubital nervure projecting slightly beyond it; both the recurrent nervures are received shortly beyond the middle; the second transverse cubital nervure regularly roundly curved, not sloped from the top towards the transverse cubital. Length 5-6 mm. Granada, Nicaragua.

Three new species of *Tiphia* taken by Prof. Baker in Nicaragua are all smaller than usual with the Central American species; they may be separated thus:

- A. Radial cellule broad, bluntly rounded at the apex; the second recurrent nervure received nearer the middle than the apex; the apex of the first abdominal segment with a distinct, crenulated, transverse furrow..... *crenulata* sp. nov
- AA. Radial cellule narrow, sharp pointed at apex, projecting beyond the transverse cubital; the first abdominal segment without a crenulated furrow.
- B. Metanotum with two keels, the area twice longer than wide, smooth, impunctate. Length 4-5 mm..... *Granadensis* Cam.
- BB. Metanotum with three keels, the area not twice longer than wide. opaque, aciculated. Length 7 mm..... *Marcosensis* Cam.



INVERTEBRATA PACIFICA

Edited by C. F. Baker, Estación Agronómica, Santiago de las Vegas, Cuba.

HYMENOPTERA

SOME NEW GORYTES-LIKE WASPS

C. F. BAKER.

For several years a number of species of the old genus *Gorytes* have remained unnamed in my collection, even after considerable study of the literature. This summer I had the good fortune to be able to compare these species with the material in the collection of the Academy of Natural Sciences of Philadelphia. I found nothing like any of them there. Some of the forms described here may come within the specific limits of certain species described by Handlirsch, though it is impossible to determine that at present. The references to the modern Ashmeadian genera are given in each case.

5791 *Gorytes sapellonis* n. sp.

A large black species with narrow yellow markings, and the marginal cell deep smoky.

Female: Length 12 mm. Pubescence fine and rather dense, varying from silvery and longer on face to shining golden on penultimate segment and pygidial area, on these latter areas being also longer and denser.

Head distinctly narrower than thorax, the eyes gently emarginate within above, the orbits slightly convergent below. Face densely punctate above, to coarsely rugosely so on the clypeus which has two small yellow spots above. The mandibles are reddish at the tips. Upper inner angle of eyes very broadly rounded, the inner border standing at very much less than a right angle with the occipital border of the eye. Antennae piceous, articles 1-6 of flagellum bright ferruginous below.

Thorax coarsely punctured, thickly so on the mesonotum, less strongly but still thickly on the scutellum, sparsely on pleurae. Mesopleurae with an oblique foveolate furrow, metapleurae nearly smooth and with two deep foveae connected by a deep furrow. Upper triangular area of metanotum bounded caudad by foveolate furrows and terminat-

ed by a deep five-sided fovea. The deep median furrow of the upper area is continuous with that on posterior area where it is foveolate. The yellow markings on thorax are a narrow band on pronotum, tubercles, quadrangular patch below tegulae, small dashes near hind angles of mesonotum and postscutell. The tegulae are piceous within to ferruginous without.

Abdomen not petiolate, black, dorsal segments I to III with narrow subapical bands which are broadened laterally. On dorsum the puncturation is very fine and somewhat dense, below very sparse, the segments with a subapical line of very distinct punctures and about one-fourth of the length at the extreme base smooth and shining. Ventral segment I with a median dentiform tubercle, ventral segment II inflated to a blunt central point.

Legs black to piceous, with yellow marks on the tibiae outwardly and covered with a minute dense pale pubescence. Tarsi largely ferruginous. Tibiae without small spines on the outer surface.

Wings unevenly smoky, very deeply so in the marginal cell, the nervures very dark. Second cubital cell much longer than third on the cubital nervure. Third abscissa of radius about as long as first two together.

Taken in Sapello Canon, New Mexico, by Oslar.

5792 *Hypomellinus flavicornis* n. sp.

A slender medium sized species, with the yellow markings predominant, the antennae pale reddish yellow, the wings pale fuscous.

Male:—Length 10.50 mm. Pubescence pale, very finely and closely appressed over the whole body.

Head as broad as thorax, the eyes not emarginate above, rather strongly convergent below. Head with larger scattering punctures on a very finely and densely punctate surface, the larger punctures disappearing on the sides of face and supraclypeal area but present on clypeus. Upper inner angles of eyes with the sides standing at right angles. Face below antennae, narrow orbits except above, and mandibles except at tips, yellow. Antennae reddish throughout, the eighth flagellar article lengthened and the 9th and 10th broadly excavated below.

Thorax sculptured like the head above, the finer puncturation becoming obsolete on the pleurae. The mesopleurae are bordered in front and below by a foveolated groove, the broad shallow furrow between meso and metapleurae uniform throughout and carinately rimmed. Upper area of metanotum bordered by foveolated grooves with many small oblique grooves on the sides and with the median groove slender and terminating in a large irregular central fovea. Posterior portion of metanotum with the median groove becoming smaller, the petiolar area and sides of metathorax rugose. The yellow markings on the

thorax are a broad laterally expanded band on the prothorax, the tubercles, an L-shaped mark below, tegulae, dots on basal angles of mesonotum, scutellum and postscutellum, and very large oval spots on either side of metanotum.

Abdomen petioliform, very weakly and sparsely punctured on a shagreened background. The segments are all yellow except the extreme bases, broader on first and second, narrow on the remainder, the last segment ferruginous.

Legs reddish yellow, with coxae and trochanters largely, and femora towards base, piceous. Anterior femora gradually broadened below in to a broad flattened inflation.

Wings evenly fuscous, the veins towards base and the stigma pale straw colored, the remainder darker. Second cubital cell much shorter than third on the cubital nervure. Third abscissa of the radius twice the length of the first two together.

Taken at Claremont, Southern California (Baker).

5793. *Hoplisoides umbonatus* n. sp.

A rather small black species with yellow markings, the legs yellow and black and the wings dark fuscous on costal half.

Male: Length 8 mm. Pubescence very fine and appressed, inconspicuous excepting on last two abdominal segments, where it is longer and slightly golden.

Head large and thick, slightly broader than the thorax, subquadrate as viewed from above. Head very sparsely punctured on a background of exceeding fine and dense puncturation, sides of face and supraelytral area nearly smooth. Inner orbits not at all emarginate above, and nearly parallel below. Face below antennae, inner orbits, and scape underneath, bright yellow. Flagellum piceous above, ferruginous below, the eighth article broadly excavated underneath.

Thorax very sparsely punctate on a smooth or somewhat shagreened background; scutellum minutely punctured. Mesopleurae bounded in front and below by a non-foveolated furrow, the broad and shallow furrow between meso and metapleurae broader below, carinately rimmed, its anterior face rugose. Upper area of metanotum with seven or eight deep smooth closely approximated oblique grooves on either side of the median groove, the bounding foveolated groove rapidly broadening caudad to the rather small median fovea. The posterior face of metanotum is in large part covered with deep very coarse longitudinal rugae. The yellow markings on thorax are a broad line on pronotum, the tubercles, an irregular elongate patch below tegulae, narrow line on sides of metanotum. Tegulae ferruginous with a yellow dot. Abdomen not at all petiolate, black, with apical yellow bands, very broad and deeply emarginated on I and II, narrower on the others. The band is continuous on the venter only on the second segment.

Legs yellow, coxae and trochanters partly, femora above, and posterior tibiae above, black or piceous. Tibiae supplied with numbers of irregularly placed minute spines on outer surface.

Wings iridescent, the veins dark, the membrane deep smoky on costal half, subhyaline on anal half. Second cubital cell distinctly shorter than third on the cubital nervure. Third abscissa of radius somewhat longer than first two together.

Collected at Claremont in Southern California by C. F. Baker.

5794 *Hoplisoides arizonensis* n. sp.

A small compact black species with narrow yellow markings, figured wings and yellow legs.

Female: Length 8 mm. Pubescence very scant and fine everywhere, with a few long hairs between ocelli and along sides of abdomen.

Head as broad as pronotum, with a coarse and rather open puncturation on a minutely densely punctate background, sides of face nearly smooth. Face between eyes broader than long. Inner orbits not at all emarginate above, parallel below. Inner orbits below, basal two-thirds of clypeus, and scape underneath, yellow. Flagellum clavate, piceous above, ferruginous below.

Mesonotum punctured like the vertex, the scutellum less strongly. Mesopleurae coarsely sparsely punctate, with a non-foveolated rimmed furrow in front and below. Furrow between meso- and metapleurae with a simple but deep groove within, carinately rimmed only in front. Upper area of metanotum with a rather fine bounding groove, its disc bearing on either side of the median groove about twelve fine oblique carinae. Posterior face of the metanotum entirely coarsely rugoso-punctate, the rugae extending on to the sides apically. The yellow markings of thorax are a narrow pronotal line narrowed medially, the tubercles, and a bigeminate mark on scutellum. Tegulae ferruginous.

Abdomen black with narrow apical bands on segments I-V, the first broader and medially widely emarginate, the others slightly emarginate on the sides. Venter without yellow. Ventral median line of first segment deeply incurved on apical half. Pygidium bluntly rounded at tip, its entire surface coarsely longitudinally rugoso-punctate.

Legs bright ferruginous, coxae, trochanters, and femora within at base, black. Tibiae with a few stout spines laterally, the spines of tarsi in part remarkably long and stout.

Wings iridescent, irregularly fuscous, the veins dark, the stigma straw colored. The fuscous areas are a small one on transverse median nervure a simple but deep groove within, carinately rimmed only in front, and second discoidal cell, with the coloring extending into third discoidal and third submarginal cells. Second cubital cell distinctly shorter

than third on the cubital nervure. Third abscissa of radius longer than first two together.

Collected by Oslar at Prescott, Arizona.

5795 *Hoplisoides clavatus* n. sp.

A small black compact species, almost entirely finely densely punctured and with very pale yellow narrow markings and subhyaline wings.

Male: Length 6.5 mm. Pubescence fine, closely appressed; some longer hairs about lower part of face.

Head large, subquadrate as viewed from above, slightly broader than the thorax. Inner orbits not at all emarginate above, strongly convergent below, so much so that the clypeus appears abnormally extruded, and the face has a dished appearance. Orbits below narrowly, scape underneath, clypeus on the apical two-thirds except a piceous blotch at the middle, yellow. Mandibles entirely piceous. Flagellum clavate, broadly pale ferruginous underneath, narrowly above and funicular article piceous.

The furrow between meso and metapleurae is very unique, being extremely broad without a deeper median groove, not carinately rimmed at the sides, but sharply demarked below by a continuation of the carinate rim of the mesopleurae, and in the place of the anterior rim, only the fine sharp groove of the suture; its two faces are sharply rather coarsely striate. Upper area of metanotum very large, very coarsely obliquely rugose on either side of the foveolate median groove which terminates in a long acutely pointed median fovea situated entirely within the upper area. Posterior face rugose, foveolate-rugose near the hind margin. The lateral shoulders of metathorax are covered with a mat of long silvery white hair. The yellow markings on thorax are a narrow line on pronotum, the tubercles, small spots below the tegulae, and a narrow line near the hind margin of scutellum.

Abdomen not at all petiolate. Segments I-V with narrow apical bands, the first medially emarginate, the others, suddenly broadened laterally. Venter entirely black, shining, shagreened, with very few punctures. The pygidium is black, somewhat narrowed just before the ferruginous apex, the surface longitudinally rugoso-punctate.

Legs black, fore and middle femora beneath at apex, and hind tibiae posteriorly, yellow, tarsi piceous. Middle and hind tibiae with a considerable number of stout spines on posterior surface. Fore tarsi only with greatly elongated spines on outside.

Wings subhyaline, the nervures and stigma uniformly dark.

Second cubital cell nearly the same length as the third on the cubital nervure. Third abscissa of the radius slightly longer than the first two together.

Taken in Ormsby county Nevada by C. F. Baker.

5796 *Hoplisoides Birkmanni* n. sp.

A medium sized black species, with costal half of wings very dark fuscous, legs and markings reddish yellow, sides of metathorax ferruginous, and with the body mostly very coarsely irregularly deeply punctate, the punctures more or less separated and the interstices with more or less minute puncturation.

Female: Length 8 mm. Pubescence fine and appressed throughout. Head narrower than thorax, the orbits not emarginate above, parallel below.

The pleurae are very coarsely sculptured. The furrow between meso- and metanotum is not demarked, there being merely a broad shallow depression, but in this lies a deep smooth groove which is strongly bent below. Postsutell coarsely longitudinally rugoso-punctate. Upper area of metanotum high, short, and rather suddenly rounded into the posterior face, and not bounded posteriorly by furrows; its surface bears about fourteen very sharp longitudinal carinae. Posterior face very coarsely rugoso punctate, the rugae very pronounced near the posterior border, the central fovea illly defined, the median groove very slender. The yellow markings on thorax are a broad line on pronotum, the tubercles, a long mark below the tegulae, and the scutell. The tegulae, narrow lines on the sides of the mesonotum, and two large blotches on the metathorax are ferruginous.

Abdomen with the puncturation obsolete on the bases of the segments, very coarse on the second ventral segment, and coarsely rugoso-punctate on the fifth dorsal and the pygidium. The pygidium is very sparsely haired and broadly rounded at the tip.

Legs reddish yellow, the coxae and trochanters partly, and femora within at base, piceous. Tibiae outwardly with a number of small spines. Outer spines on fore tarsi greatly lengthened. Wings very dark fuscous on costal half, veins dark, stigma straw colored. Second cubital cell shorter than the third on the cubital nervure. Third abscissa of radius considerably longer than the first two together.

Taken at Fedor, Texas, by that indefatigable hymenopterologist the Rev. G. Birkman, to whom it is dedicated.

5797 *Hoplisoides pruinosus* n. p.

A small compact, black, narrowly yellowmarked species, with fuscous marked wings, reddish yellow legs, and the body covered with fine dense pruinose pubescence.

Female: Length 7 mm. Head distinctly narrower than pronotum, eyes not emarginate above, and distinctly converging below. Pubescence of face longer and silvery. Sides of face nearly smooth, and clypeus with a few shallow punctures. Inner orbits broadly, face below anten-

nae, mandibles except tips and scape underneath, yellow. Flagellum piceous, ferruginous underneath towards base.

Scutel with but few of the larger punctures. Mesopleura bordered in front by a foveolated groove. The furrow between meso and meta-pleurae replaced by a broad shallow depression but medially with a long narrow deep groove which is slightly bent below. Postsentel longitudinally rugoso-punctate. Upper area of metanotum with about fourteen sharp carinae, the bounding groove wanting. The posterior face has very large punctures above and at sides, broadly depressed at middle below, the median groove replaced by a carina, the central fovea irregular, the surface below transversely rugose. The yellow markings of the thorax are a broad band on pronotum, the tubercles, a long mark below tegulae, the sentel, and a dot within tegulae. The tegulae are ferruginous.

Abdominal tergites with apical yellow bands, broad on I and IV, narrow on III, IV, and V, the first somewhat emarginate. All of the segments are basally impunctate, the second ventral and the fifth and sixth dorsals more coarsely punctate. The pygidium medially carinate towards apex.

Legs reddish yellow, the coxae and anterior trochanters partly piceous. Tibiae with very few weak spines outwardly.

Wings hyaline, smoky from (and including) the first discoidal to the marginal cells, the veins and stigma equally dark. Second cubital cell shorter than the third on the cubital nervure. The third abscissa of radius longer than the first and second together.

Taken at Fedor, Texas, by Rev. G. Birkmann. This species bears a strong superficial resemblance to *Birkmanni*, but in most of its details is very distinct.

DESCRIPTIONS OF NEW AMERICAN TIPHIIDAE

P. CAMERON.

5060 *Tiphia belizensis* sp. nov.

Black, shining, densely covered with long white pubescence, the calcaria and tarsal spines white; wings clear hyaline, the nervures and stigma black; apex of radius broadly roundly curved, its basal abscissa straight, oblique, about one fourth shorter than the second, the apex distinctly projecting beyond the second transverse cubital nervure which is broadly rounded, slightly sloped towards the cubitus and about twice the length of the second; the second recurrent nervure is received shortly beyond the middle, in front being roundly curved to shortly beyond the middle, the posterior shorter part is straight and has a much more oblique slope. Clypeus strongly punctured except at the

apex which is alutaceous, the middle slightly and broadly incised. Front closely punctured below, the punctures closer and finer below, where it is also opaque; above the antennae the punctures are stronger, more distinct and more closely separated, this being also the case with the vertex, except in front of the ocelli where there is a smooth space. Palpi testaceous, covered with white pubescence. Pronotum strongly punctured, except around the apex, the propleurae smooth, shining, obscurely striated at the base, the striated part wider below. Mesonotum broadly punctured in the center, the part inside the lateral furrows smooth, the puncturation at the apex closer and finer. Scutellum punctured like the base of mesonotum, more sparsely in the center; the post-scutellum is more strongly closely and uniformly punctured and more thickly covered with long fuscous hair than the scutellum. Metanotal area slightly narrowed towards the apex, which is transverse; the central keel does not extend to the apex, being about two-thirds the length of the lateral; only the upper three striae on metapleurae extend from the base to the apex, the others are more irregular, wider apart, and commence shortly behind the middle. The puncturation on the mesopleurae is weak and sparse. Base of first abdominal segment finely, sparsely punctured, the apex smooth with a wide, deep, closely, strongly crenulated furrow in the middle of the smooth part; the puncturation on the other segments becomes gradually stronger on the apex; that on the pygidium is close, deep and strong, with smooth line down the middle of the apical slope.

Taken in Belize, British Honduras, by Mr. J. D. Johnson.

5418 *Tiphia acuticollis* sp. nov.

Black; the head densely covered with longish white pubescence, above the antennae closely strongly punctured; the face weakly punctured, the clypeus more strongly, its apex broad and transverse. Mandibles with a rufous band before the apex. Palpi dark fuscous, thickly covered with white pubescence. Base of pronotum distinctly bordered by a stout keel, the part behind the keel depressed and stoutly closely crenulated; the pronotum, except for a wide irregular curved space on the apex, punctured but not closely or strongly; the propleurae smooth, shining, aciculated below. Mesonotum inside the furrows, strongly but not very closely punctured, outside the furrows smooth. The scutellum is more strongly and closely punctured; at the apex is a small smooth space, widened behind. Postscutellum closely rugosely punctured all over, thickly covered with long fuscous pubescence. Metanotum with three keels, the outer slightly converging towards the apex, the central weaker towards the apex, its apical slope shagreened, densely covered with white pubescence; the upper half of the metapleurae with five stout keels, straight at the base, curved at the apex; the second from the top is short. Basal segment of abdomen more strongly

punctured than the others, at the apex (which is itself smooth) is a distinct crenulated transverse furrow; the pygidium is coarsely punctured with a smooth keel down the center of the apical half. Apical abscissa of radius roundly curved, the basal curved and slightly angled in the middle; the second recurrent nervure is received beyond the middle close to the base of the apical third; it has the front half roundly curved outwardly, the lower straight, oblique; the second transverse cubital nervure has the upper third obliquely sloped outwardly, the rest is almost straight; the wings have a violaceous iridescence, the nervures and stigma are deep black. Male. Length 6 mm. San Marcos, Nicaragua (Baker).

The second transverse cubital nervure is roundly curved outwardly to near the apex, not shaped like a reaping-hook as in *marcosensis*, which differs further from it in not having the post-scutellum closely rugosely punctured all over, its apical half being smooth. The form of the second cubital cellule separates it from *crenulata*; in that species the apex is not twice wider than the base; in the present species it is more than twice; the apex of the radius too, projects distinctly beyond it, which is not the case with *crenulata*. The wings, too, have a much more distinct violaceous tinge. A further distinction lies in the fact that the keel on the base of the thorax is much more prominent in *acuticollis* and the furrow bordering it is deeper, more clearly defined and strongly crenulated. The nervures in *crenulata* are fuscous, not deep black as in the present species.

5420. *Tiphia fulvicauda* sp. nov.

Black; the pubescence on the head, thorax, base of abdomen and legs white, on the apical segments of abdomen longer, denser, fulvous or pale golden; the pygidium is ferruginous; wings hyaline, slightly, but distinctly tinged with fulvous, the stigma black, the nervures fuscous. Metanotum with three keels, the central distinctly thinner than the outer. Female. Length 9 mm. Ormsby county, Nevada. July (Baker).

Mandibles broadly ferruginous in the middle; the flagellum of antennae fuscous below. Clypeus projecting, clearly separated, of equal width throughout, its apex transverse, smooth and bare; the oral region is fringed with long pale golden hair. Front and vertex strongly but not closely punctured. Base of pronotum strongly closely punctured, the apex smooth; the pleurae with a broad punctured band around the edges above, the middle smooth, the rest closely strongly striated except on the narrowed lower part which is finely rugose. Mesonotum inside the furrows strongly irregularly but not closely punctured. Scutellum with a broad punctured band on the base, a narrow one on the sides and apex (almost a single row of punctures), and a few scattered ones in the smooth center. Metanotum in the center almost

smooth, the base and inner side of the outer areae strongly closely aciculated; the apical slope smooth, bare in the center, sparsely haired round the edges. The upper half of the metapleurae entirely and the apical half of the lower strongly regularly striated, the lower basal half smooth. The apical joints of the four anterior tarsi rufo-fulvous, the tarsal spines of a brighter red colour; the four anterior spurs white, the hinder blackish. The anterior part of the third transverse cubital nervure is roundly curved outwardly.

5424 *Tiphia fortistriolata* sp. nov.

Black, densely covered with longish white pubescence, the basal part of metanotum somewhat strongly transversely striated, the apex at the sides with three short stout keels; the central keel only reaching to the middle of the central area; it becomes gradually narrowed towards the apex; the outer keels slightly converge towards the apex; the apical slope is obscurely finely widely striated on the outer edges. Propleurae finely closely striated on the basal half above, the apex obscurely punctured, the rest strongly closely striated. Mesopleurae distinctly but not strongly or closely punctured. Metapleurae somewhat strongly closely striated, aciculated at the base. Front and vertex strongly closely punctured, a deep transverse furrow in front of the anterior ocellus. Pygidium strongly deeply punctured, without any central smooth line. The puncturation on the abdomen becomes stronger and closer towards the apex. Basal abscissa of radius in two equal slopes; the apical abscissa straight above, oblique below; it projects distinctly beyond the apical transverse cubital nervure; the upper part of the second recurrent nervure is roundly curved below. Male. Length 7 mm. Ormsby country, Nevada, July. (Baker).

Near the apex of the first abdominal segment is a punctured transverse furrow or depression. Basal slope of prothorax closely transversely rugose; the base is keeled above; the thorax above is closely finely punctured; the puncturation on the scutellum is sparser at the base and still more so in the middle.

Characteristic of this species is the strongly, if irregularly, striated metanotum, with the abbreviated or at least weakened, central keel. A smaller variety from Colorado has the puncturation and striolation less strongly developed.

5413 *Paratiphia erythroua* sp. nov.

Black, shining, the pubescence on the front and vertex very sparse dark and short; on the occiput dense long and white; except on the sternum the pubescence on the thorax is very sparse and short; the basal segment of abdomen is sparsely haired, the third to fifth fringed (especially laterally) with long white hair; the hair on the penultimate

is much denser, long and bright fulvous; pygidium reddish, bare, closely distinctly punctured; wings tinged with fuscous violaceous, the stigma blackish, nervures fuscous; basal abscissa of radius about one-fourth shorter than the second. Female. Length 5 mm. San Marcos, Nicaragua (Baker).

Lateral keels of metanotal area roundly curved, not touching at the apex, but distinctly separated, the area being four, not three angled, as in the other species; down its middle is a stout straight keel, on the sides are five irregular keels, the third and fourth on the outer side are curved; the apical slope is smooth, shining, bare, with a few minute striae around the edges, Basal half of metapleurae smooth, the apical stoutly irregularly striated. The apex and the upper part of the propleurae aciculated, the rest stoutly closely striated. Mesopleurae strongly, but not closely punctured. Four anterior and apical joints of posterior tarsi rufous; the hinder spurs white.

This species should be known by the keels of the metanotal area being somewhat widely separated at the apex and by the sides of the metanotum being striolated.

5416 *Paratiphia nicaraguaensis* sp. nov.

Black, densely covered with white pubescence, the abdominal hair fringe pale golden; clypeus yellow, slightly tinged with orange; the mandibles broadly reddish; palpi black tinged with fuscous; wings not very clear hyaline, the stigma and nervures black, the first abscissa of the radius oblique, slightly but distinctly shorter than the second the apical oblique, rounded, angled near its junction with the radius, which slightly projects; the fourth transverse cubital nervure is oblique, the lower half slightly rounded outwardly. Front and vertex closely, coarsely punctured, except for a small transverse space before the anterior ocellus. Clypeus strongly, but not closely punctured, its apex broadly rounded. Base of pronotum bordered by a sharp stout keel, behind which is a deep distinct furrow, widely crenulated; the middle is strongly punctured, the apex smooth. Mesonotum strongly closely punctured around the edges, the center much more sparsely punctured. Scutellum, except at the base, closely strongly punctured; the post-scutellum is more closely rugosely punctured. The basal two central areas of metanotum are wider than long, roundly broadly narrowed from the outer to the inner side, but not strongly; the inner half of the outer part is smooth, the outer stoutly closely striated; the central two of the second row are almost square, the others longer than wide, the apical slope is irregularly sparsely striated around the edges. Propleurae coarsely reticulated at the base above, the rest almost smooth. Mesopleurae strongly, but not closely punctured; the base with a widely crenulated furrow. Metapleurae closely striated above, the striae on the rest oblique, somewhat widely separated. Pygidium

strongly deeply punctured; there is an aciculated smooth line down the apical two-thirds; the sides are furrowed and bordered by stout keels. The second recurrent nervure is received shortly below the middle and is roundly curved backwards from shortly above the middle. Male. Granada, Nicaragua (Baker).

Comes near to *P. iridipennis* Cam. (Inver. Pacific. I, 69).

5419 *Paratiphia fortistriolata* sp. nov.

Black, densely covered with long white pubescence; the clypeus and basal half of mandibles whitish yellow; the fore tarsi rufo-fulvous; wings clear hyaline, the stigma and nervures black, the first abscissa of the radius not much more than half the length of second, the apical is almost straight below, roundly sloped above. Basal region of metanotum very strongly reticulated, the apical row shorter and broader than the basal, the two central basal areas irregular, widened outwardly at the base, the apical two longer than wide, narrowed from the outer side at the base, the apical slope finely reticulated above, closely rugose below; the metapleurae stoutly widely striated except at the base below, the striation there being close and at the apex running into reticulations. Propleurae closely punctured above, the rest closely reticulated. Mesopleurae strongly and regularly punctured. Pronotum closely, almost rugosely punctured. Mesonotum closely regularly punctured, the sides more widely strongly and irregularly, as is also the apex; the center smooth with a row of punctures down the middle and a few on the sides. Center of pygidium smooth, the smooth space widest in the middle, from where it becomes gradually narrowed to the apex. Male. Length 11 mm. Ormsby county, Nevada, July. (Baker).

Tibial spines black, the calcaria and tarsal spines white. This species is larger than any of the southwestern males known to me; in size it comes next to *robusta* Cam., known only in the female sex.

5425, 5429 *Paratiphia varipunctata* Cam. Invert. Pacifica, I, 106.

There are two specimens, taken at the same place and date as the type (Ormsby county, Nevada) which differ in the structure of the metanotal area. In one its central keel is irregular, smooth, and dilated in the middle, the sides of the area being irregularly wrinkled and aciculated; in the other there is a distinct narrow central keel which reaches to the apex and is bordered by a narrower keel not reaching to the apex, the lateral part bearing a few oblique striae. In all of the specimens the lateral striae vary; they become stronger towards the apex.

5410 *Paratiphia albilabris* Lep. cf. Cameron, Invert. Pacifica, I, 105.

As it is possible that the following described species from California may be Lepelletier's species, I propose to describe it under the name of *albilabris*, so that the name may be definitely used for some species. Only an examination of the type (if it still be in existence) can show what *albilabris* really is.

Black, closely punctured and covered densely with white pubescence like the other species; the clypeus, labrum and mandibles to near the middle, are white; the tips of mandibles are red, broadly black behind; wings hyaline, the stigma and nervures black; basal abscissa of the radius fully one-half the length of the second, the apex broadly uniformly rounded; the upper part of the fourth transverse cubital nervure is oblique, straight above, slightly rounded below, the lower shorter part straight. The two central areas of metanotum slightly longer than wide, of equal width throughout, transverse at the apex, the outer areas are longer and narrower; on the outer edge are two curved keels; the second row of areas are shorter and wider; the apical slope is aciculated, weakly irregularly striated above, more strongly closely and regularly below. Upper half of propleurae alutaceous, punctured on top, the lower strongly but not very closely striated. Base of metapleurae smooth, the rest strongly striolated, the striae longer (nearer the base) above than below. Pygidium strongly deeply punctured, a smooth line widened in the middle, down the center. Calcaria and the spines on hind tarsi white; on the anterior tarsi the spines are rufous.

Comes close to *P. occidentalis* from which it may be known by the much more regular clearly defined areas on the base of metanotum; in the present species there are four distinct longitudinal keels outside the two central areas; in *occidentalis* there is one central and an indistinct outer keel; in the latter, too, the metanotum is striated at the base below, the whole being almost regularly striated.

The nervures of *albilabris* are called "red", a colour I have not seen in any species of *Tiphia* or *Paratiphia*. In some species the nervures vary from black to fuscous or pale fuscous.

5423 *Paratiphia occidentalis* sp. nov.

Black; the clypeus except around the top creamy white; the basal half of mandibles yellow, tinged with rufous; palpi black; wings clear hyaline, the stigma and nervures black, the apex of the radius rounded above, straight and oblique below, there being a sharply pointed angle at the junction of the two. The two basal areas on metanotum confluent at the base, the dividing nervure being present only at the apex, the two form an area slightly longer than wide, slightly narrowed at the base; next to them is a larger square area, the outer part with some

stout striae; the apical transverse row of striae are stout, the middle three stouter and more widely separated than the others; the apical slope is irregularly striated around the edges; the center is finely obscurely striated. Propleurae smooth, irregularly striated down the center. The depressed base of metapleurae almost smooth, the rest stoutly regularly striated, the lower part more irregularly and weakly, and bounded behind by a closely striato-reticulated space, above by a smooth one. Pygidium strongly deeply punctured, with a smooth raised line running from the top to the bottom. Male. Length 6 mm. Ormsby county, Nevada, July (Baker).

The basal abscissa of the radius is slightly oblique and is about one-fourth shorter than the second; the apical transverse cubital nervure is straight and oblique to below the middle; the lower part is roundly curved outwardly.

5430 *Paratiphia texana* sp. nov.

Black, the labrum and the mandibles except for a black mark near the apex in front, red, the base of wings hyaline, the apex from the stigma fuscous violaceous, the stigma black, the nervures blackish brown; the metanotal area slightly longer than it is wide at the base, the keels roundly curved, not meeting at the apex nor reaching to the transverse keel, to which they are united by two short straight keels. Head and thorax closely strongly punctured; a smooth space in front of the ocelli and at the apex of the propleurae in the middle, this latter space being narrowed and longitudinally striated. Base of metapleurae closely aciculated, the rest striated, the striae not strong, curved in the central part, oblique above and below where they are closer and more regular. There is a straight keel down the middle of the metanotal area which is finely irregularly transversely striated and aciculated; the sides of the metanotum are coarsely aciculated. Abdomen strongly closely punctured, the puncturation becoming stronger towards the apex. Pygidium closely strongly longitudinally reticulated, striated to near the middle, the rest closely finely punctured, reddish along the sides. The pubescence on the abdomen and legs is long dense and white, the calcaria are white, the spines on the fore tarsi are long and white, tinged with rufous. The third transverse cubital nervure is straight, oblique, not roundly curved; the first abscissa of the radius is as long as the second.

The male has the clypeus and mandibles white except at the tips, the pubescence is denser and the puncturation stronger; on the base of the metanotum are two areas which are slightly narrowed towards the apex; the central keel is stouter than the lateral and is continued past the first transverse keel to the second; the parts outside it are irregularly striated; between the two transverse keels are a number of longitudinal ones which are closer to each other and more oblique on the

outer than on the inner side. The upper half of the metapleurae are stoutly obliquely striated, the lower closely rugosely punctured; the apical slope of metanotum closely strongly reticulated. The abdomen is much more strongly and closely punctured than in the female; the pygidium is strongly deeply closely punctured, keeled down the middle from the base to near the apex; the sides are more strongly keeled. Wings colored as in the female except that the nervures are deep black.

5405 *Paratiphia neomexicana* sp. nov.

Black, the clypeus and mandibles, except at the apex creamy white; the labrum reddish, palpi fuscous; base of metanotum without any central basal area, but with two large lateral ones, bounded by roundly curved keels; the apex in the center with two depressions, with a stout keel between them, and a weaker one on the outside, there being none bounding the base which is thus open; the space between the basal lateral areas and the transverse apical keel is stoutly, but not closely striated; the apical slope is closely distinctly longitudinally striated, the striae more or less intermixing. Propleurae strongly closely punctured above, the depressed center obliquely striated, smooth above and below. Mesopleurae, as usual, strongly punctured. Metapleurae strongly, more or less obliquely striated, except on the lower basal part, which is aciculated and has only weak indications of striae; the striae above are weaker and more irregular than they are below; they also intermix at the apex. The fringe on the abdominal segments is fulvous or pale golden; the pygidium is strongly deeply punctured, with a broad opaque smooth band down the center of the apical slope. Wings clear hyaline, the stigma and nervures black; the apex of the radial cellule wider than usual, the radius broadly rounded; the third transverse cubital nervure obliquely sloped, slightly rounded outwardly below. Male. Length 8 mm. Santa Fe, New Mexico (Osler).

Characteristic of this species is the absence of the usual well defined central areae on the base of the metanotum.

5417 *Paratiphia ormsbyensis* sp. nov.

Black, the clypeus and mandibles, except the teeth, clear white; the two central areae on the base of the metanotum of equal width, longer than wide though not much so; the pygidium shining, strongly punctured, the punctures large, irregular, deep; there is a smooth space at the base in the middle which is small and triangular, and from it an indistinct smooth narrow line runs to the apex; wings clear hyaline, the stigma and nervures black, the former not so deeply black as the latter; the first abscissa of radius slightly shorter than the second; the apex rounded but with a slight rounded angle below. Male. Length 7 mm. Ormsby county, Nevada. July (Baker).

Front and vertex closely strongly punctured, a large smooth bare shining space in front; the space between and at the sides of the ocelli smooth bare and shining. Clypeus as strongly but not so closely punctured as the front; it is gradually narrowed to a bluntly rounded point which is depressed and fulvous in color; the clypeus and mandibles are covered, but not thickly, with long white hair. Central areae on metanotum smooth and deep; the lateral basal part irregularly strongly punctured at the base, the apical half smooth; the middle of the apical area has the longitudinal keels indistinct except the central one; the outer area stronger. Propleurae punctured distinctly above below with curved stout striae at the base, the apex with finer closer oblique striae; the mesonotum more closely and strongly and more regularly punctured than the mesonotum which is only widely punctured in the middle. The last ventral segment has a smooth line down the middle; the basal half is raised and strongly punctured, the apical strongly aciculated. The four anterior tarsi are bright fulvous red, the basal joint of the middle broadly black; the posterior tarsi are of a duller red towards the apex.

5411 *Paratiphia intermedia* sp. nov.

Black, the apical half of the clypeus yellowish white, the tips of the mandibles rufous; basal abscissa of the radius two-thirds the length of the second, the apical angled in the middle, the upper and lower branches of equal length, straight, oblique; the fourth transverse cubital nervure has almost the front three-fourths obliquely sloped, the lower part straight. Central area of metanotum of equal width throughout, those bordering it are as wide at the base, but are narrowed at the apex; the outer areae are regular, slightly narrowed at the apex, all longer than wide; the second row are shorter and wider; there is a similar but smaller apical row. Pygidium at the base and sides strongly, closely and deeply punctured; there is a smooth keel in the center of the apical two-thirds. Pronotum, except at the apex, strongly closely punctured; the puncturation on the mesonotum is stronger except at the base and sparser especially in the middle.

Scutellum smooth in the middle, the smooth part widest in the middle. Postscutellum closely rugosely punctured. Metapleurae strongly and widely striated above, more closely and finely below. Male. Length 6 mm. Claremont, California (Baker).

Should be known by the black upper half of clypeus, by the black mandibles, and by the apical slope of the metanotum being reticulated.

5422 *Paratiphia parvula* sp. nov.

Black, the apex of the clypeus white, of the mandibles red; the flagellum of antennae inclining to fuscous below; wings hyaline, the

stigma fuscous, the nervures darker; the basal abscissa of the radius about one-fourth shorter than the second, the apex wide, broadly roundly dilated in the middle. Central areae of metanotum slightly longer than wide, wider at the apex on the inner than on the outside, the sides at the base rugosely punctured; the middle areae of the second row are square, the outer longer than wide; the apical slope is aciculated with some obscure striae around the top. Metapleurae on the upper apical half with some stout irregular longitudinal striae, the rest smooth. Propleurae smooth, irregularly wrinkled at the base. Mesopleurae strongly closely punctured. Pygidium with a smooth keel down the middle, extending from the base to the apex and of equal thickness, the rest smooth on the inner, strongly punctured on the outer half. Apex of fore tibiae and the greater part of the tarsi rufous. Male. Length 4.5 mm. Ormsby county, Nevada (Baker).

This is the smallest of the North American species. It has the yellow apical line on the clypeus narrower than it is in *intermedia*, from which it differs further in the keel on the pygidium running from the base to apex, not on the apical half only; it differs also in the fuscous stigma and in the apical abscissa of the radius being broadly rounded; the pubescence on the head and thorax is less dense and the third transverse cubital nervure is straight oblique in one slope, not angled below as in *intermedia*.

A NEW MUTILLID NEAR BRACHY CISTIS FROM CALIFORNIA

C. F. BAKER

At Claremont, California I captured, flying by day, a single specimen of a most remarkable small shining black mutillid, a male, which in many features was like *Brachycistis* and which possessed a most remarkable superficial resemblance to a figitid. A very high, arched mesonotum, very broad first abdominal segment, and very deep second segment, gives it a habitus quite distinct from that of *Brachycistis*. Its wing venation is, moreover, quite peculiar. The stigma is very large and dark. The marginal cell is extremely small, very narrow, extends from apical third of stigma to costal margin and is not appendiculate. The single submarginal cell is subquadrangular but much broader apically. There are two discoidals, the first rectangular and but little longer than broad. The veins are mostly nearly colorless. The transverse median between first and second segments is scarcely evident as viewed from nervure is nearly interstitial with the basal vein. The constriction above, but from the side the depth of second segment accentuates the ventral sinus. The prothorax is very short—a narrow band from above. The ocelli are minute, not at all enlarged, the hind ocelli being about as far from eyes as from each other.

There are certain *Brachycistis* in which the venation is somewhat reduced, but I do not know of one that even approaches the remarkable combination of characters presented by this insect. It may prove to be the yet unknown male of some other genus, but it would be hard to even make a guess concerning it now. In the meantime it may carry the at least temporary genus name of *Brachycistellus* and the species I call *figitiformis*.

This insect is 4 mm. long, shining black, with very thin longish whitish pubescence; the wing bases, mandibles and tarsi are piceous; the scape and funicular article are also slightly piceous; the flagellum is opaque black. The surface of the body is mostly smooth and shining, with very few scattering but rather strong punctures, more dense on clypeus, pronotum, hind margin of scutellum, and first abdominal segment. The narrow upper portion of metathorax is separated from the rather concave posterior declivity by an arched transverse carina; above this carina the surface is strongly, roughly, longitudinally rugoso-punctate; below it is first a row of large punctures and then the surface is finely roughened. The hind tibial spurs are very long, being half the length of the first tarsal article.

INVERTEBRATA PACIFICA

Edited by C. F. Baker, Estación Agronómica, Santiago de las Vegas, Cuba

HYMENOPTERA

TWO NEW BEES OF THE GENUS CERATINA

C. F. BAKER.

5987 *Ceratina belizensis* n. sp.

Female: Length 11 mm. Head mostly except the black vertex, thorax except the black entire median portion of the mesonotum, brilliant green, with a slight brassy tinge. Abdomen deep shining purple. Antennae and legs piceous, the latter, together with the venter, covered with rather long and thick ferrugineous pubescence. Wings uniformly pale smoky and iridescent, the veins dark, the stigma translucent. First submarginal cell about twice the length of second, the first abscissa of radius equalling third.

Face very coarsely and roughly punctured, black, except the sides and the lateral borders of clypeus which are brassy green; a round yellow mark in the middle of the broadest part of the clypeus. Labium and mandibles black. Outer orbits and median portion of cheeks smooth, impunctate. Vertex punctured like front, but on cheeks and gular region the punctures are much smaller and sparser. Hind ocelli about as near occipital margin as to eyes. Posteriorly the median black area of mesonotum is smooth and shining, almost impunctate; the thorax otherwise is thickly, coarsely, and quite uniformly punctured; the punctures on lateral angles of mesonotum, and on postsutellum are very fine and thick. Propleurae finely punctured throughout, more thickly above. Upper area of metanotum broad triangular in outline, the posterior border distinct, anteriorly with about fifteen longitudinal wrinkles on either side, most of which finally diverge caudad and fade into a microscopic roughness on the posterior border. The posterior face of metanotum is weakly sparsely punctate and strongly shagreened. The tegulae are testaceous, the tubercles concolorous with the rest of thorax. The first abdominal tergite is finely thickly punctate, the 2nd, 3rd, and most of the 4th sparsely coarsely punctured and smooth and shining, with a bluish cast on discs of segments; posterior border of 4th, and all of 5th and 6th very coarsely, thickly,

and roughly punctured, becoming even rugose posteriorly. The 6th segment carinate at the acute tip. All coxae, and fore femora outwardly, green.

Collected in Belize, British Honduras by Mr. J. D. Johnson, a former student of mine. I had males of *ignara* Cr. taken in Acapulco, Mexico, and at first supposed this to be its female. But it is very different in details of structure and coloration, and is one of the most striking of the known American species.

5988 *Ceratina marginata* n. sp.

Female: Length 7.5 mm. Entirely deep black, with a tinge of green on vertex, lateral angles of mesonotum, scutellum, and metanotum. Antennae and legs black, tibiae piceous, tarsi ferruginous. Pubescence white and pale ferruginous. Wings smoky, broadly and densely so along the anterior margin, this band completely filling the marginal cell and reaching the tip of the wing; veins paler caudad, towards the costa very dark, the stigma entirely opaque. First (submarginal cell slightly more than twice length of second below, but first abscissa of radius distinctly shorter than third.

Head very coarsely but not very thickly punctured, most densely so on vertex, most openly so on clypeus, the interspaces smooth and shining. The yellow mark on clypeus is long and narrow, two-thirds the length of clypeus and narrowed caudad; it nearly reaches the front margin of clypeus. Labrum and mandibles black. No impunctate areas on cheeks. Hind ocelli nearer to occipital margin than to eyes. The gular region nearly impunctate, and on either side at about the center is a short stout conical tooth.

The mesonotum is smooth and shining above, with a very few scattering punctures, its margins, especially the lateral angles, with very fine and dense puncturation. The puncturation on disc of scutellum is sparse, while on postscutellum it is reduced to a fine opaque microscopic roughness over the whole surface. Propleurae finely punctate below, thickly longitudinally wrinkled on the upper half. Upper area of metanotum not clearly margined posteriorly, depressed medially where there is a fine median carina; on either side are a number of very short wrinkles. From these, over the whole disc of metanotum the surface is impunctate and coarsely shagreened. The tegulae are piceous, the tubercles black. First abdominal tergite smooth, shining, nearly impunctate; 2nd and 3rd thickly coarsely punctured, more sparsely so along the discal areas, and more finely so basally; the 4th, 5th and 6th are very thickly and very roughly double punctate. There is no median carina on the short acute terminal point. Tarsi piceous, to ferruginous on the last article.

Collected in Belize, British Honduras, by Mr. J. D. Johnson.

This is a remarkably distinct species, entirely unique in the gular armature and wing coloration.

ON SOME NORTH AMERICAN SPECIES OF *CHARTERGUS*

BY P. CAMERON.

4847 *Chartergus arizonaensis* sp. nov.

Black, densely covered with a white silky pile and more sparsely with short white pubescence; a narrow line in the center of the pronotum, a narrow one on the apex of the first abdominal segment and broader bands on the other segments, pale yellow; wings fulvous-hyaline, the apex smoky from the end of the stigma; the stigma, costa and basal nervures bright rufo-fulvous, the apical nervures bright rufo-fulvous, the apical nervures black. Female. Length to end of second abdominal segment 7 mm. Collected by Osler at Nogales, Arizona.

Clypeus distinctly wider than long, shining, sparsely but somewhat strongly punctured. Front and vertex strongly, moderately closely punctured; the part between the antennae is more weakly punctured above and is keeled in the middle; the lower part is smooth. Hinder ocelli separated from each other by a slightly less distance than they are from the eyes, which are shortly pubescent. Occiput weakly, the cheeks strongly, keeled. Temples above as long as the second and third antennal joints united. Scutellum strongly punctured; its apical slope steep, smooth and shining; its apex above is not quite transverse; the postscutellum has the same slope, is smooth, above broadly dilated in the middle, not transverse like the apex; the sides of the metanotum above the middle project into a distinct bluntly rounded tooth or projection. First abdominal segment minute, rounded at the base. Second abscissa of radius one fourth the length of the third. Mandibles rufous behind the teeth. Third antennal joint about one-fourth longer than the following.

In Mr. Ducke's table his species runs near to *C. critellus* Fox, cf. Bolet. d. Mus. Goeldi, IV, 329. *C. aztecus* Cam., is not unlike it; it is stouter, is densely pilose and haired all over; the angles of the metanotum are differently formed and much larger, becoming gradually wider towards the point, from the base and apex, the terminal point not being separated, in *arizonensis* the lower part, below from the base, forms a distinct tooth.

The discovery of this species in the United States is of much interest as the genus *Chartergus* has not hitherto been recorded further north than Mexico, nor is it known in the West Indies.

4846 *Chartergus centralis* sp. nov.

Black; the apex of the first abdominal segment narrowly, the apices of the others more broadly pale or orange yellow; body covered with a silvery pile and densely with short white pubescence; wings fulvous

hyaline, slightly infuscated at the apex; second abscissa of the radius about one-third the length of the third. Female: Length 9 mm. Chinandega, Nicaragua, and Champerico, Guatemala (Baker.)

Clypeus not much wider than its greatest length, shining, weakly sparsely punctured, especially in the middle. Face impunctate, shining. Front and vertex strongly, moderately closely punctured; in the center of the lower part of the front is a small but distinct deep fovea longer than wide and narrowed above and below. Hinder ocelli separated from each other by a slightly less distance than they are from the eyes. Vertex weakly, the temples sharply keeled. Base of pronotum slightly broadly projecting in the middle; the sides are rounded. Apex of scutellum obliquely narrowed towards the center; the scutellum is much more strongly punctured than the mesonotum; its apical slope is smooth and deep; in the center of the upper half is a deep narrow furrow; the post-scutellum; it is transverse below, above it is slightly rounded; it has a more distinct oblique slope than the scutellum. The base of the sides of the metanotum is straight, oblique, the end of this part being broadly rounded and clearly separated below from the lower part, forming an angle but not a tooth. Sides of metanotum punctured and pilose, the middle smooth. There is a distinct smooth impressed line down the center of the basal half of the mesonotum; there is an obscure yellow line in the center. The pronotum is much more strongly and closely punctured than the mesonotum.

The following synopsis may be useful in separating these and related species:

- 1 (2) Length 7 mm. Clypeus closely longitudinally punctured and striated; apex of scutellum and postscutellum forming one slope, mesonotum as strongly punctured as the sides of the pronotum; wings not tinged with yellow *mexicanus* Cam.
- 2 (1) Length over 7 mm. Clypeus weakly sparsely punctured; apex of scutellum and postscutellum not forming one slope; mesonotum not so strongly punctured as the pronotum; wings clearly yellow.
- 3 (4) Entire head and body covered densely with pale fulvous pubescence and pale hairs *aztecus* Cam.
- 4 (3) Entire head and body not densely covered with longish pubescence.
- 5 (6) Apex of scutellum furrowed in the middle, sides of metanotum at the base broadly roundly projecting, the projection not clearly separated from the lower part *centralis* Cam.
- 6 (5) Apex of scutellum not furrowed; the projection on metanotum tooth like, clearly separated from the lower part *arizonensis* Cam.

5582 *Chartergus acutiscutis* sp. nov.

Black, densely covered with dark silvery pubescence, two spots over the antennae, a broad band commencing at the top of the lower half of the eye incision, going along the sides of clypeus and round its apex, the inner edge being irregular in outline, a small spot on the top of the eyes, a line, narrower and more regular than the inner one, along the outer orbits, a narrow line on the pronotum, the basal three-fourths of the scutellum, the apex with a slight rounded incision in the middle, postscutellum, a longish oblique conical mark below the tegulae, and moderately broad lines on all the abdominal segments, that on the first on top only, on the others all around, bright orange yellow. Wings hyaline, the nervures and stigma black. Female. Length to end of second segment, 6 mm. Belize (J. D. Johnson.)

Head longish, triangular, the eyes strongly converging below; the vertex, the top and center of front with distinct scattered punctures. Ocelli in a triangle, not quite equilateral, the hinder being separated from each other by a slightly greater distance than they are from the anterior, and by a little less distance than they are from the eyes. Clypeus a little longer than wide, narrowed towards the apex which is rounded. Thorax twice longer than wide, its base rounded, the puncturation distinct but not strong or close, the metanotum hollowed, more shining, smooth in the center. Antennal scape fulvous, blackish above. Fore coxae bright orange above. The temples are narrower than usual. Second abdominal segment distinctly wider than long.

This species differs from the others of the genus in that the eyes are bare, and what is of more importance (for the pubescence may have been rubbed off) is the postscutellum not being transverse but gradually produced at the apex into a narrow point. Apart from these two points it is a genuine *Chartergus*. The first abdominal segment is small, much narrower than and clearly separated from the second. It forms a new group in the genus.

ON SOME DIPLOPTERYGA OF BELIZE AND NICARAGUA

BY P. CAMERON

In this Publication, antea, p. 150, I have described and recorded some Hymenoptera taken by Mr. J. D. Johnson in Belize. I record here some more species from that region, also taken by Mr. Johnson, as well as a few more from Nicaragua taken by Prof. Baker. The collection contains the following known species from Belize: *Eumenes aviculus* Sauss., *Polybia atra* Ol., *Polybia acutiscutis* Cam., *Synoea cyanea* Sauss., *Polistes fuscatus* Fab., and *Mimesa striolata* Cam. From

San Marcos, Nicaragua are *Polybia spilopus* Cam., *Polybia atra* Ol. and *Odynerus nasidens* Latr. From Acapulco, Mexico, comes the type form of *Polybia pygmaea* F.

5577 *Polybia pallipes* Ol. var *centralis* Cam.

A male from Belize agrees very well with Saussure's description and figure. It is the variety with the apex of the abdomen without black. The hinder ocelli are separated from each other by one third the distance they are from the eyes and by a less distance than they are from the anterior ocellus. Mesopleural furrow distinct, the forks curved, reaching to shortly below the middle, the anterior reaching to the base. The abdominal petiole is longish, longer than the second segment; the base is narrowed to near the middle, the rest of equal width. A large black mark covers the ocelli in front, its sides are broadly continued to the antennae, leaving the middle of the front fulvous, behind it is united to a broad band which extends on to the occiput and is united to the inner edge of the eyes by an oblique line. There are three black lines on the mesonotum dilated at the base; there is a longish broad line on the apical three-fourths of the pronotum. The abdomen is darker colored than the thorax, it having no yellow tint, being uniformly rufous. Scutellum broadly fuscous in the middle. Antennae black above, the scape bright, the flagellum dark rufous below. Wings clear hyaline; the radial cellule slightly smoky in front, the stigma and anterior nervures are bright fulvous, the others black. The hinder orbits, face, clypeus, mandibles, and pleurae, are pale lemon yellow. Pronotum rounded, without angles.

This does not appear to be *lutea* Ducke. As it forms a variety of *pallipes* (and may not indeed be that species at all) I propose to call it the var. *centralis*. *P. pallipes* in its typical form is a South American species.

5578 *Polybia (Clypearia) fulvotincta* sp. nov.

Black; the lower half of the front, the lower half of eye incision broadly, clypeus, mandibles, an oblique line on the sides of the vertex behind touching the eyes, a line along the top and a narrower one along the sides of the pronotum, two large irregular marks on the scutellum, post-scutellum, a large oval mark on the lower two-thirds of metanotum at the sides, a broad line on the upper basal two-thirds of mesopleurae, a broad line dilated in the middle on the apices of the basal two-thirds of mesopleurae, a broad line dilated in the middle on the apices of the basal two abdominal segments, a narrower line on the third, not extending to the outer edges, pale orange yellow; the outer orbits, occiput largely, the greater part of pleurae, center of metanotum, and the ventral surface, largely fulvous, tinged

with red and yellow. Legs fulvous, tinged with yellow, the hind tibiae darker. Wings hyaline, the stigma fuscous, the nervures blackish. Female. Length to end of second segment 5 mm. Belize (J. D. Johnson.)

Clypeus as broad as long, its apex bluntly broadly rounded, smooth. Front and vertex strongly, but not closely punctured. Pubescence short, pale. Postscutellum large, forming almost an equilateral triangle. The first abdominal segment a little longer than wide, becoming gradually widened from the base to the apex, clearly separated from the second, which is as long as wide, and is distinctly roundly narrowed at the base. The flagellum brown below, the scape fulvous. The ocelli are in a triangle, the hinder separated from each other by a distinctly less distance than from the eyes, which touch the mandibles.

The amount of rufous color varies, as does probably also the black and yellow. The form of the basal two abdominal segments is very different from what it is in the type of the group (*apicipennis*) being broader and not clearly separated from the second.

514) **Eumenes Johnsoni** sp. nov.

Back; densely covered with a pale sericeous pile, which gives it a greyish appearance, a pale yellow narrow line of equal width along the sides of the apical half of the nodose part of the abdominal petiole and cross its apex; the fore tarsi below densely covered with reddish golden pubescence, the apical joint for the greater part yellowish testaceous; the underside of the scape brownish, darker at the base than at the apex. Punctuation of the head, thorax, and basal abdominal segments weak, but quite distinct and not very close. Wings uniformly dark fuscous violaceous, the nervures and stigma black. Female. Total length 22 mm. Belize (J. D. Johnson.)

Base third of abdominal petiole narrowed, the rest widened into a large side pyriform mass, the base rounded, becoming gradually widene, the apex transverse, slightly raised, its center with a longitudinal furrow, extending back to the base of the apical fourth of the dilated part; the furrow deep, narrow, widened at the apex, which ans into the yellow border; there are no teeth, the second segment longish campanulate, distinctly roundly narrowed at the base. Clypeus weakly sparsely punctured, about one-third longer than wide, the apical third flattened, the apex with a distinct rounded incision. The hinder ocelli separated from each other by a slightly but distinctly greater distance than they are from the eyes. Occiput transverse, the temples roundly narrowed, as wide as the space between the hinder ocelli. Base of thorax transverse, without salient angles. On the apex of the mesonotum are two short shallow furrows, shorter than the tegulae. Apex of postscutellum broadly roundly narrowed;

the apex of metanotum depressed in the middle, the sides forming broad rounded lobes. The thorax is 7 mm. long, across the tegulae 5 mm.

Belongs to the Section *Pachymenus*, but resembles closely some of the Alpha division (*E. azureipennis*,) and of *Montezuma* (*M. caerulea*.)

5142 **Eumenes Belti** sp. nov.

Black; the inner side of the eye incision yellow; the apical two joints of the antennae, with the hook, pale orange yellow, the apex of the first abdominal segments, and the fore femora largely in front, yellow; wings almost hyaline, darker towards apex, with violaceous, green, and brassy iridescence; the stigma and nervures black. Male: Length (total) 7 mm. Chinandega, Nicaragua (Baker.)

Head and thorax strongly, closely, regularly punctured, the head less strongly than the thorax, the clypeus if anything more strongly, but not so closely punctured as the front and vertex. Clypeus distinctly longer than broad, the apex transverse, the sides distinctly keeled inside the keel is a deep clearly defined furrow. Ocelli in a slight curve, the hinder separated from each other by a distinctly greater distance than they are from the eyes, which are very large; the temples and malar space are very short. Base and apex of thorax broadly rounded; the apex of post-scutellum roundly dilated, smooth. Metanotum regularly, strongly reticulated, as are also the metapleurae except at the base; the mesopleurae coarsely, rugosely punctured, the punctures of the base larger, rounder, and more clearly separated. Abdominal petiole as long as the thorax, its apex becomes gradually wider; the second segment is slightly longer than it is wide at the apex, distinctly roundly narrowed at the base; it is distinctly punctured, most strongly on the basal half, the extreme apex of which is raised, smooth, and bordered behind by a crenulated band; it is, as are also the following segments, covered by a white pile.

Antennal hook sharp-pointed at the apex, not reaching quite to the base of the joint. The eyes strongly converge in front, being there separated by the length of the second and third antennal joints united.

A very distinct species. It is more strongly punctured, and the eyes converge more below than in *E. regulus* and *aviculus*; it should be known from these by the reticulated, not rugosely punctured metanotum, by the keeled and furrowed sides of the clypeus, and by the more slender and sharp pointed hook of the antennae.

5179 **Nortonia acapulcoensis** sp. nov.

Black, a line on the apex of pronotum, narrow and not very distinct, two marks, narrowed on the innerside, on the apex of the scutellum, a line on the top of the first abdominal segment, and one on the second all around, yellow. Wings fuscous violaceous, the stigma and nervures black. Thorax closely strongly punctured except on the apex

of the post-scutellum and on the center of the metanotum. Female. Length 7 mm. Acapulco, México (Baker.)

Clypeus, if anything, more strongly, but not so closely punctured as the thorax, slightly longer than wide, its apex projecting, transverse, depressed in the middle. Temples wide, rounded, but not narrowed, the occiput transverse. Thorax longer than wide, transverse at the base, the apex broadly rounded, depressed in the middle. Pronotum, mesonotum, and scutellum excepting the middle at the apex, strongly closely punctured. Post-scutellum raised into a distinct ridge, rugose at the base, almost margined on the top, the apical slope obliquely rounded, smooth, almost transverse below. Apex of metanotum broadly depressed, bearing small scattered punctures, the broadly rounded sides closely and distinctly but not coarsely punctured and are covered with silvery pubescence. The basal abdominal segment has a distinct neck, from which it becomes gradually widened to the apex which is transversely depressed above, the second distinctly longer than wide, slightly roundly narrowed at the base; all the segments except the last, are closely punctured, the puncturation becoming weaker towards the apex.

5207 *Ancistrocerus pulchricornis* sp. nov.

Black; the underside of antennal scape, clypeus, a line about three times longer than wide, rounded above and of almost equal width above the antennae, a broad line on the lower part of the eye incision, the base of the pronotum narrowly, a more distinct line along its sides, an irregular spot below the tegulae, a small spot outside the scutellar transverse furrow, postscutellum, a broad line on the apices of the basal two abdominal segments, and the four anterior coxae femora and tibiae below, pale yellow.

Wings hyaline, smoky violaceous on the apical half, the stigma and nervures black. Flagellum except the apical joint, pale orange yellow; the hook black, stout, as long as the joint. Male. Length 8 mm. Belize (J. D. Johnson.)

Head strongly but not closely punctured, the clypeus more sparsely punctured, clearly longer than wide, its apex roundly incised. Pro- and mesothorax closely strongly punctured, the base transverse, not projecting laterally. Postscutellum smooth at the base, the rest strongly but not closely punctured, the apex narrowed gradually but not sharply. Metanotum above strongly deeply punctured, more or less reticulated, the rest of the metanotum less strongly obliquely punctured, and less strongly in the middle than on the sides. Pro- and mesopleurae strongly closely punctured; the metapleurae strongly sparsely punctured above, more weakly below, where it is densely covered with silvery pubescence and projects into a stout white tooth. Basal slope

of first abdominal segment smooth behind the keel, the rest strongly closely punctured, as are also the others except the last. The transverse keel on the first segment is stout, clearly raised, the second segment is distinctly longer than wide. The thorax is twice longer than wide.

Seen from above the first abdominal segment is broad and transverse, shorter than it is wide at the apex. A longish, slenderly built insect. Belongs to *Stenancistrocerus*.

5205 ***Ancistrocerus trituberculatus*** sp. nov

Black; the sides of metanotum stoutly keeled; the clypeus, labrum, a small round spot over the antennae, a short line on the lower edge of the eye incision, a narrow line on the base of pronotum, a less distinct one along its sides, two large almost continuous marks on the apex of scutellum, two spots on the sides of the metanotum behind the keel, a conical spot below the tegulae, a distinct line on the apices of the basal two abdominal segments, a less distinct one on the third, and the underside of the antennal scape, yellow. The underside of the coxae, apical half of anterior femora, the middle more broadly and the greater part of the four anterior tibiae, yellow. Wings fuscous-violaceous the posterior paler, the costa and stigma black. Male. Length 9-10 mm. Belize (J. D. Johnson.)

Clypeus longer than broad, very strongly punctured, the apex transverse, with the sides very slightly projecting, the front and vertex are as strongly but more closely punctured. Occiput transverse, sharply margined. Pro- and mesothorax, except the propleurae and base of mesopleurae, strongly closely punctured; the base transverse, keeled, not projecting laterally. Base of postscutellum raised, very coarsely punctured, the rest smooth; the apex rounded, the smooth part forming the segment of a circle, reaching to the top of the metanotum, which is short, hollowed, smooth except for some obscure striae, the sides rounded, yellow in the middle. Basal slope of first abdominal segment closely transversely striated below, smooth above, finely punctured at the base and apex, smooth in the middle. The second segment slightly wider than long, its apex distinctly incurved, closely strongly punctured, the middle with a stout raised keel or tubercle on the apical two-thirds and a large rounded tubercle on either side of it; the third segment is closely strongly punctured, its apical half depressed; the other segments are less strongly punctured, the puncturation becoming gradually weaker, the pygidium being only sparsely punctured; its apex is broadly rounded.

The lower part of the pronotum projects, but not so much so as the upper; the middle is therefore roundly hollowed. Metapleurae smooth,

towards the apex finely striated. Antennal hook stout, brown, as long as the joint. Belongs to Saussure's Section i, Syn. Am. Wasps. 157.

5375 *Odynerus belizensis* sp. nov.

Black; a curved spot on the top of clypeus, a distinct line of almost equal width on the base of the thorax, a broad line near the apex of scutellum, an irregular spot narrowed below on the pleurae under the tegulae, a line on the upper part of the first abdominal segment, and on the apex of the second all around, orange yellow; the knees, base of fore tibiae and the four posterior on the outside entirely of a paler yellow; tegulae yellow, with a fuscous spot in the middle; wings fuscous violaceous, the nervures and stigma black. Female. Length 7 mm. Belize (J. D. Johnson.)

Head, including the clypeus, strongly closely punctured. Clypeus, if anything, broader than long, its apex depressed, transverse. Temples wide, not narrowed, the occiput transverse. Base of thorax almost transverse, the sides hardly projecting. Pro- and mesothorax strongly, closely punctured all over, except on the apex of the postscutellum which is almost transverse; its base is distinctly raised up and separated from the scutellum. Sides of metanotum broadly rounded, the central part almost smooth the sides almost strongly but not closely punctured. Base of metapleurae less closely punctured than the rest. First abdominal segment large, bell-shaped, closely strongly punctured except on the base, the second is distinctly longer than wide and is closely uniformly punctured; the former is slightly depressed before the apex. Thorax twice longer than wide. The pubescence on the metapleurae is pale golden.

5372 *Odynerus Belti* sp. nov.

Head black; the clypeus, labrum, mandibles, except the lower edge and apex, a spot irregularly rounded above, gradually obliquely narrowed below, over the antennae, the narrow lower pedicel narrowed below, yellow; a rufous line behind the eyes; the scape and basal two joints of flagellum rufous; thorax black; pronotum narrowly yellow at the base, the rest and tegulae rufous; basal half of scutellum rufous, the apical yellow, tinged with rufous; postscutellum yellow, as is also a large spot covering the sides of the basal half of median segment, the marks gradually narrowed below, a band broadly dilated laterally on the apex of the first and not dilated bands on the other segments, yellow; the rest of the abdomen rufous, save a broad line down the middle of the first segment, a broad one on the base of the second continued down the center to the yellow apex, the black mark becoming narrowed. Wings deep fuscous violaceous, the stigma and nervu-

res black. Male. Length to and of second segment 10 mm. San Marcos, Nicaragua (Baker.)

Clypeus almost smooth, broadly rounded above, not much longer than broad, its apex broad, transverse, the front and vertex strongly closely punctured. Thorax more closely rugosely punctured, the base transverse, not projecting at the sides. Apex of postscutellum with a steep slope, the top with a serrated crest. The sides of metanotum project into a stout tooth in the middle; the upper part of the side is more rounded than the lower. Metapleurae closely, obliquely striated. First abdominal segment cup-shaped, smooth; the other segments except the apical, are closely punctured, much more strongly on the apex than elsewhere; the apex of the second is slightly raised. The antennal scape reddish, yellow below; the following two joints are red, the, the hook stout, dark red, its tip reaching to the base of the 11th joint. The coxae, trochanters, basal half of four front femora, and the hinder femora to near the apex are black; the rest of the legs yellow, slightly tinged with rufous.

NEW HALICTINAE FROM THE WESTERN UNITED STATES

BY J. C. CRAWFORD.

3051 *Halictus mellipes* n. sp.

Black, head and thorax slightly shining, abdomen very shiny, pubescence very ochraceous; facial quadrangle slightly longer than broad, hardly narrowed below; clypeus greatly produced; face above antennae closely rather finely punctures, below coarsely obliquely so; clypeus very shiny with large punctures; mesothorax smooth, rather finely and closely punctured; base of metathorax longitudinally wrinkled to apex, rounded behind; truncation with no sign of salient rim; wings yellow, distinctly darkened at apex; nervures and stigma testaceous, tegulae dark with a reddish center and legs black; tarsi, intermediate and hind kness, intermediate tibiae behind, and hind tibiae rufous; pubescence of legs golden; hind inner spur with numerous saw-like teeth; abdomen closely and finely punctured more sparsely so on first segment; bases of segments 2-4 with bands of appressed ochraceous pubescence. Length about 9 mm.

Mts. near Claremont Cal.; on Ribes. (Baker.)

This species has the coriaceous lustre of *coriaceus* but differs from that species by its narrower face, more shiny mesothorax, more rugose metathorax, no salient rim at edge of base, less numerous punctures on first abdominal segment, large second submarginal etc. This is a *Lasioglossum*.

Halictus robustus n. sp.

Black, shiny, especially the abdomen, very robust; facial quadrangle broader than long, face above antennae closely rather finely punctured, below more coarsely obliquely so; clypeus smooth, shiny, sparsely punctured; antennae dark; pubescence of head and thorax abundant, distinctly ochraceous; thorax closely and rather finely punctured, shiny, not lineolate; median and parapsidal grooves well impressed; truncation of metathorax not surrounded by a salient rim; surface of truncation finely lineolate and with scattered punctures; metapleurae finely lineolate and with a few punctures, at the upper posterior angles finely roughened; base of metathorax narrow, finely longitudinally wrinkled to apex, not enclosed but set off from the pleurae by an angle; mesopleurae rugosopunctate; tegulae black with a red center; wings slightly yellowish and slightly dusky at apex, nervures and stigma almost honey color; second submarginal cell almost as long as third, the latter narrowed about one-third to marginal; legs black, pubescence ochraceous, hind inner spur with about 6 broad, blunt saw-like teeth; abdomen finely closely punctured, including the first segment; apical margins of segments narrowly testaceous, bases of segments 2-4 with bands of appressed slightly ochraceous pubescence; base of segment 1, apical margins of 2-3 and 4 and 5 entirely thinly covered with ochraceous pubescence. Length $9\frac{1}{2}$ mm.

Claremont Calif. (Baker.)

In general appearance like the *arcuatus* group, but the closely punctured first abdominal segment separates it from all of them. This is an *Evyllaenus*.

4689 **Halictus nigrescens n. sp.**

Black, head and thorax closely and finely punctured, finely lineolate, dull; thinly covered with whitish pubescence slightly ochraceous on dorsum of mesothorax; facial quadrangle broader than long; punctures above antennae crowded; antennae dull reddish beneath toward apex; median groove deeply impressed, parapsidal grooves distinct; truncation of metathorax surrounded by a cordate rim reaching beyond upper lateral angles but very faint above medially; disc of metathorax shiny, slightly irregularly wrinkled, wrinkles reaching apex, the surface somewhat roughened; wings slightly dusky, nervures and stigma honey-color; second submarginal fully as long as third, the latter narrowed about one-third to marginal; tegulae large, dark, with a light center and a broad hyaline border; legs dark, apical joints of tarsi reddish, hind inner spur with about four rather short teeth; abdomen shiny, transversely lineolate, depressed apical margins of segments broadly testaceous; segment 1 sparsely finely punctured, bases of other segment

closely so; abdomen covered with sparse dirty whitish pubescence more abundant apically and with lateral basal patches of appressed whitish hair on segments 2 and 3 and similar hair scattered over segment 4. Length about $6\frac{1}{2}$ mm.

Mts. near Claremont, Cal. (Baker;) on *Salix*. This is an *Evyllacus*.

4687 *Halictus latifrons* n. sp.

Black, head and thorax finely lineolate, thorax somewhat shiny; facial quadrangle much broader than long; head and thorax with abundant long rather ochraceous pubescence; face above antennae closely punctate, punctures crowded; sides of face below antennae as if with short vertical striae caused by sparse oblique punctures opening towards the eyes; clypeus and supra-clypeal area shining, with sparse fine punctures; mesothorax with fine close punctures; median and parapsidal grooves distinct; base of metathorax finely irregularly rugulose to apex; salient rim of truncation not reaching to upper lateral angles but faintly indicated above; truncation not sculptured, finely lineolate and with scattered setigerous punctures; metapleurae finely; wings slightly dusky, nervures honey-color; second submarginal much smaller than third; third only slightly narrowed above; tegulae largely testaceous; legs dark brownish; hind inner spur with about seven very oblique teeth; abdomen brownish black, shiny, first segment finely sparsely punctured, other segments closely so at bases; depressed apical margins finely transversely lineolate and largely testaceous; small lateral basal hair patches on segments 2 and 3. Length about 7 mm. Santa Clara Co., Calif. (Baker.)

Differs from *arcuatus* in the non-sculptured truncation of metathorax, finer sculpture of base of metathorax, salient rim of truncation not complete and smaller size; from *granosus* in its smaller size, finer sculpture of base of metathorax, and finer, closer punctures on abdomen; *occultus* is said to greatly resemble *granosus* but has the four teeth of hind inner spur oblique and only hair patches on segments 2 and 3, so the same characters may apply. Differs further from all of the above in the numerous teeth of the hind inner spur. This is an *Evyllacus*.

4688 *Halictus ruficornis* n. sp.

Black, shiny, face closely and finely punctured above antennae; face long and narrow, covered with dense white appressed pubescence below antennae; antennae long, flagellum fulvous beneath, joint 4 longer than 2-3; clypeus anteriorly, and mandibles basally, yellowish; knees and tarsi testaceous, tubercles reddish; mesothorax finely and closely punctured, shiny, lineolated only anteriorly, median and parapsidal grooves

well impressed; truncation of metathorax without a salient rim, finely lineolated and with fine oblique punctures pointing downward; base of metathorax finely irregularly longitudinally wrinkled not reaching the apex, the intervening space finely lineolated but shiny; mesopleurae finely roughened, with large irregular shallow punctures; metapleurae finely rugose, appearing as punctures under a low power, at upper edge distinctly punctured; wings hyaline, nervures and stigma brownish; tegulae largely testaceous; abdomen black, shiny, not lineolated, rather finely, closely punctured, the first segment more sparsely so; the depressed apical margins of segments inclining to reddish; base of the 4th ventral segment medially with a triangular elevated enclosure. Length about 6 mm.

Ormsby Co. Nev., July. (Baker.) This is an *Evyllaenus*.

5018 ***Halictus cyaneonotus* n. sp.**

Head and thorax dark green, dull, metathorax, a deep Prussian blue, greatly contrasting, abdomen black, with metallic reflections; pubescence of head and thorax ochraceous; facial quadrangle broader than long; face above antennae with fine crowded punctures somewhat sparser and coarser below; clypeus and supraclypeal area largely purplish-black, sparsely punctured; mesothorax finely very distinctly lineolated, with close rather coarse punctures; median and parapsidal grooves plain; base of metathorax not enclosed, with very numerous irregular longitudinal rugulae, reaching apex; truncation rounded above, the surface finely lineolate and with a few faint striae running upward from the center of the base; wings slightly yellowish-dusky; second submarginal large, narrowed to marginal; nervures and stigma testaceous; tegulae dark with a reddish center; legs brown, pubescence slightly ochraceous; hind inner spur with about three long teeth; abdomen impunctate, finely transversely lineolate, bases of segments 2 and 3 and almost all of 4 thinly covered with whitish appressed pubescence; depressed apical margins of segments dark reddish. Length about 6 mm.

Ormsby Co., Nev., July. (Baker.) This is a *Chloralictus*.

5030 ***Halictus albohirtus* n. sp.**

Brassy green, very close to *pruiniformis* but differs in being more shiny, the mesonotum not lineolated but shiny; nervures except subcosta all light, base of metathorax with rugulae not reaching to apex, the intervening space smooth and shiny, broad apical margins of abdominal segments whitish; the whole insect covered with snow white pubescence (in *pruiniformis* more griseous) subappressed on head and thorax and appressed on abdomen; legs dark, middle and hind tarsi testaceous contrasting with tibiae; hind inner spur with about four teeth. Length about 5½ mm.

Ormsby Co. Nev., July. (Baker.) This is a *Chloralictus*.

6107 *Halictus hyalinus* n. sp.

Head and thorax almost as in *pruiniformis* but more shiny and the base of metathorax indistinctly roughened and with only a few rugulae at each side and one medially, these not reaching apex, the apical part smooth and shiny; wings hyaline, nervures light; legs dark, tarsi testaceous, hind inner spur with about 4 long teeth; abdomen dark brown, apical margins of segments narrowly testaceous, abdomen finely punctured, first segment very sparsely so, transversely lineolate. Length about $5\frac{1}{2}$ mm.

Ormsby Co. Nev. July 6. (Baker.)

This species has whitish wings similar to *albipennis* from which it is distinguished by the much smoother metathorax, more shiny mesothorax, lighter colored legs etc. This is a *Chloralictus*.

5026 *Halictus brunneiventris* n. sp.

Head and thorax green with whitish pubescence; abdomen aeneous brown, thinly covered with whitish hairs except on discs of segments 1-3; face dull from crowded strong punctures; facial quadrangle much longer than broad, inner orbits subparallel; clypeus sparsely punctured, produced, reddish apically; antennae beneath reddish; punctures of mesothorax coarser than on head, close, surface lineolated, somewhat shiny, median and parapsidal grooves well impressed; mesopleurae with coarse punctures; metathorax rounded behind, base lineolated and with irregular longitudinal striae almost reaching apex; truncation lineolated, otherwise almost non-sculptured; metapleurae lineolated and with a few setigerous punctures; tegulae light; wings slightly dusky, nervures and stigma light honey color; legs brown, pubescence whitish; hind inner spur with about three long teeth; abdomen closely, finely punctured, broad apical margins testaceous, and indistinctly transversely lineolated. Length about 4 mm.

Ormsby Co. Nev., July, (Baker.) This is a *Chloralictus*.

6108 *Halictus tegulariformis* n. sp.

Very close to *tegularis* but differs in having the parapsidal grooves not apparent, first abdominal segment not transversely lineolate, punctures along the median groove on mesothorax not finer than rest and close (in *tegularis* much finer than others and sparse) wings more yellowish. Length about 5 mm.

Differs from *tegularis* by the first two characters given above for the female. Length about 4 mm.

Ormsby Co. Nev. July 6. (Baker.) This is a *Chloralictus*.

4674 *Halictus longicornis* n. sp.

Head and thorax rather brassy green, abdomen very dark brown, aeneous; punctures of head fine, close; pubescence of head and thorax abundant, griseous; antennae very long, reaching to middle of first abdominal segment, red beneath; mesothorax finely lineolate, somewhat shiny, sparsely, finely punctured, median and parapsidal grooves plain; base of metathorax strongly rugose, truncation not surrounded by a salient rim, the surface lineolate, rather coarsely sculptured; wings dusky, nervures very dark brown, stigma more reddish; legs black, tarsi yellowish testaceous; abdomen with rather close fine punctures, broad apical margins smooth impunctate. Length 6 mm.

Santa Clara Co. Cal. (Baker.) This is a *Chloralictus*.

4658 *Halictus incompletus* n. sp.

Head and thorax green, abdomen dark brownish, the apical margins of segments testaceous; facial quadrangle slightly longer than broad; face closely and finely punctured; antennae reddish beneath apically; labrum testaceous, mandibles ferruginous, the bases testaceous; head and thorax finely lineolate, dull, mesothorax finely closely punctured; median groove plain not deeply impressed, parapsidal grooves distinct; truncation with a cordate salient rim broken at upper lateral angles, strong above except medially; laterally the ends of the upper section recurved forward, base of metathorax with an elevated triangular area indicated by an angulated edge, and having a few strong irregular rugae reaching apex, those medially not so strong; surface lineolated; truncation lineolate and with a few weak striae running upwards from basal center, wings subhyaline, nervures and stigma honey color second submarginal broad, narrowed above; third narrowed nearly one half to marginal; tegulae largely dark testaceous; legs brown, tarsi testaceous contrasting; hind inner spur with about four long teeth; abdomen with scattered minute punctures, transversely lineolate, thinly clothed with appressed whitish pubescence except on discs of segments 1 and 2. Length about 5 mm.

Mts. near Claremont, Cal. (Baker), on *Ribes*; Ormsby Co. Nev. July 6. (Baker.) This is a *Chloralictus*.

6109 *Halictus nevadensis* n. sp.

Head and thorax green, finely lineolate, dull; abdomen brown, apical margins of segments testaceous, the first two segments sometimes reddish; facial quadrangle slightly longer than broad; face with crowded fine punctures; mesothorax with rather sparse, fine punctures; median

groove well impressed, parapsidal grooves faint; truncation of metathorax not surrounded by a salient rim, its surface finely lineolate; base of metathorax with irregular striae not reaching apex the intervening space lineolate, slightly elevated, making it appear as if enclosed when looking at the insect from the front; mesopleurae rugoso-punctate, metapleurae finely roughened; tegulae and nervures testaceous, stigma honey color; second submarginal rather broad, narrowed towards marginal; third narrowed about one-third to marginal; legs brown, hind inner spur with three long teeth; abdomen transversely lineolate, with scattered minute punctures, segments 2-3 with thin lateral basal hair patches of appressed white pubescence and 4 thinly covered with it; Length 4 mm.

Three Rivers, Calif. (Culbertson.) Ormsby Co. Nev. July (Baker) Very much like *incompletus* but the different structure of the metathorax readily separates them. This is a *Chloralictus*.

4660 *Halictus punctatoventris* n. sp.

Head and thorax brassy green, slightly shining; the metathorax more bluish; pubescence of head and thorax dirty whitish; the abdomen brown with a bronzy tinge and thinly covered with white pubescence more abundant apically; facial quadrangle slightly broader than long, face finely lineolate, closely, deeply coarsely punctured; mesothorax finely, very distinctly lineolate, coarsely rather sparsely punctured; median groove distinct but not deeply impressed, parapsidal grooves distinct; base of metathorax rather coarsely irregularly rugose to apex; indistinctly enclosed by the irregular rugae more apparent laterally; truncation not surrounded by a salient rim, the surface finely lineolate; mesopleurae coarsely punctured, shiny; metapleurae finely roughened dull; tegulae dark, with a reddish center, wings slightly dusky, the stigma honey color, nervures more reddish; second submarginal about two-thirds as broad as third; third narrowed almost one-half to marginal; legs dark, their pubescence dirty whitish, hind inner spur with about four long teeth; bases of segments 2 and 3 with thin appressed pubescence; all segments finely closely punctured, the apical margins reddish. Length about 5 mm.

Claremont, Calif. (Baker.)

Male. Similar, form parallel; face broad, narrowed below; antennae fulvous beneath; punctures of head and thorax finer than in ♀ and closer on mesothorax; rugae of metathorax more numerous and regular than ♀; abdomen more black, apical margins of segments brown; punctures closer, more distinct. Length about 5 mm.

Pine Lake, So. Calif. (Johnson.) This is a *Chloralictus*.

4661 *Conanthalictus Bakeri* n. sp.

Green, the metathorax blue-black; whole insect covered with sparse long white pubescence; head about as broad as long, with the facial quadrangle broader than long and the inner orbits nearly straight and parallel; face with narrow wedge shaped foveae, the broad end down; clypeus black, smooth, shiny; head finely lineolate, dull, with very sparse fine punctures, just behind the eyes a narrow smooth impunctate strip; antennae short, hardly reaching the mesothorax, the scape reaching only about half way to the anterior ocellus; mesothorax, scutellum and postscutellum finely lineolate but somewhat shiny, with a few scattered fine punctures except on the postscutellum; median groove deeply impressed, parapsidal grooves faint; truncation of metathorax not surrounded by a salient rim; base of metathorax with a semicircular area which is finely tuberculate and with a few fine longitudinal wrinkles basally; this area set off only by the edge being somewhat angulate and by the rest of the metathorax including the pleurae being lineolate; metapleurae separated from notum by a slight angle; tegulae largely testaceous, wings slightly dusky, iridescent, nervures and stigma testaceous; second submarginal narrow, narrowed above; third submarginal narrowed about one-half to marginal; legs brown, tarsi more reddish; femora greenish above, pubescence of legs brownish; abdomen with the depressed apical margins of segments testaceous; abdomen finely transversely lineolate, more closely so on bases of segments; anal fimbria sooty brownish. Length about $4\frac{1}{2}$ mm.

Claremont, Calif. (Baker.)

After November 1, 1907, the address of C. F. Baker will be Museu Goeldi, Pará, Brazil. Mr. Baker's entomological work will be continued as heretofore. He requests that all letters and packages be sent to the above address.



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